キルギス共和国
経済商務省

キルギス国
乳品質向上のための食品検査
人材育成プロジェクト（第２期）

業務完了報告書

2024 年 2 月

独立行政法人

国際協力機構(JICA)

海外貨物検査株式会社(OMIC)

一般財団法人新日本検定協会(SK)

経開
JR
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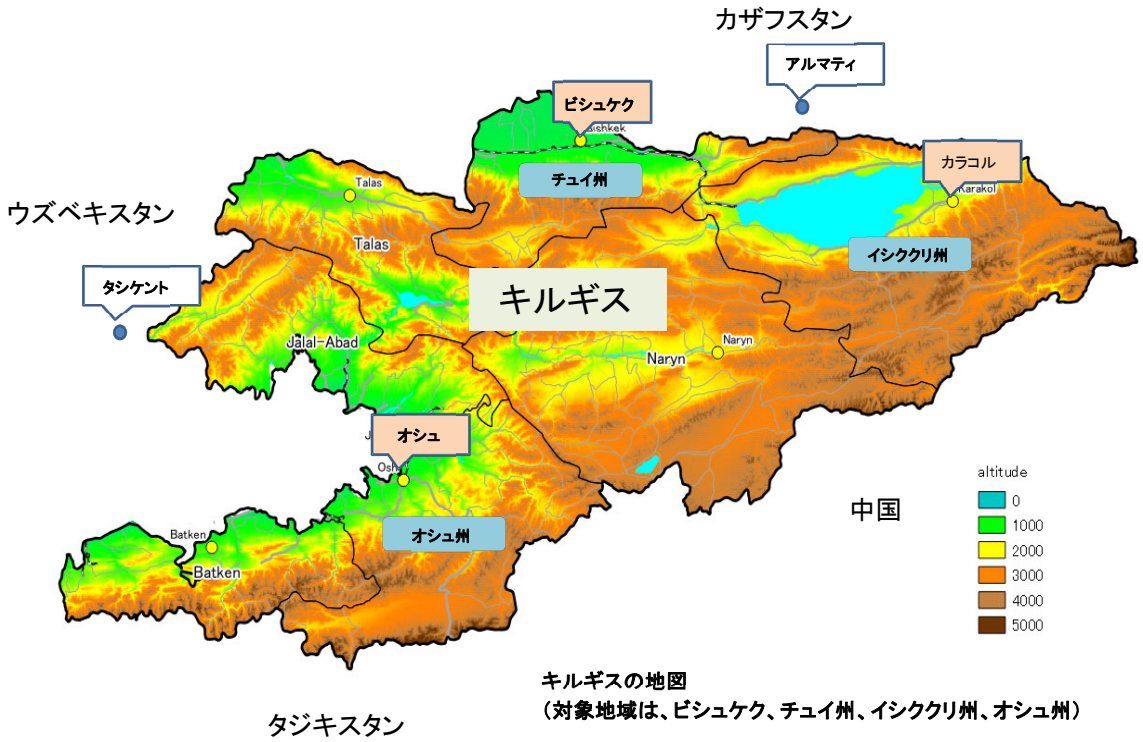

キルギスの地図
（対象地域は、ビシュケク、チュイ州、イシククリ州、オシュ州）

対象地域図

写　真

1. プロジェクト全体に係る管理運営活動

経済商務省が開催する合同調整委員会(JCC)とワーキンググループ(WG)によるプロジェクトの運営・促進

直近の活動報告及び今後の計画を
協議・決定する合同調整委員会(JCC)
(2023 年 11 月　第 7 回 JCC 会議)

プロジェクトマネージャー(PM)が
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2. 検査と HACCP 監査のための共通の人材育成活動

関係機関共通の能力強化のための技術支援や C/P 間の情報共有や意見交換

第 1 回本邦研修(2023 年 2 月)参加者による
帰国報告会 (2023 年 4 月)

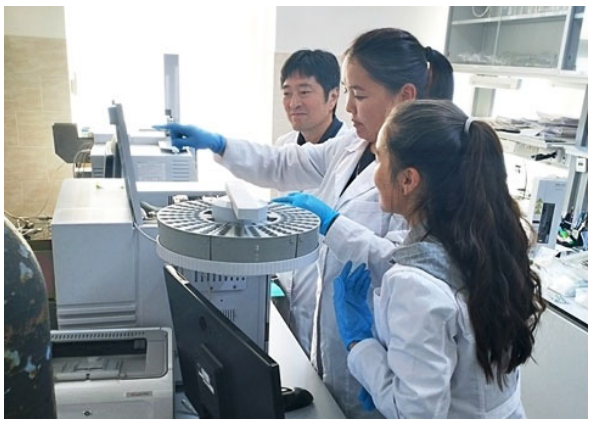
HACCP タスクチーム(DPSSES, VS)相互の
情報共有のための合同会議 (2022 年 10 月)

運営指導調査における JICA 本部
担当者による C/P へのヒアリング (2022 年 6 月)

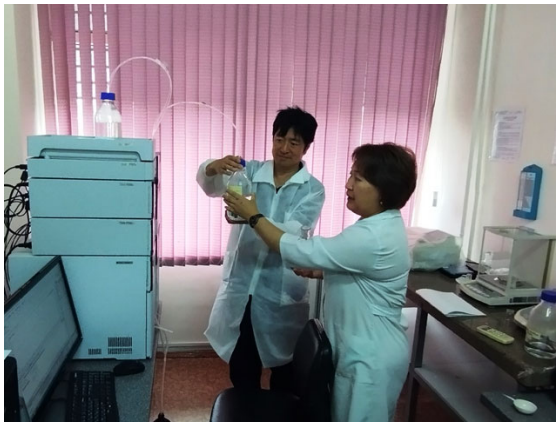
終了時評価調査における調査団による
地方検査所の活動状況調査 (2023 年 5 月)

3. 成果達成のための各機関による個別の改善活動（検査所チーム）

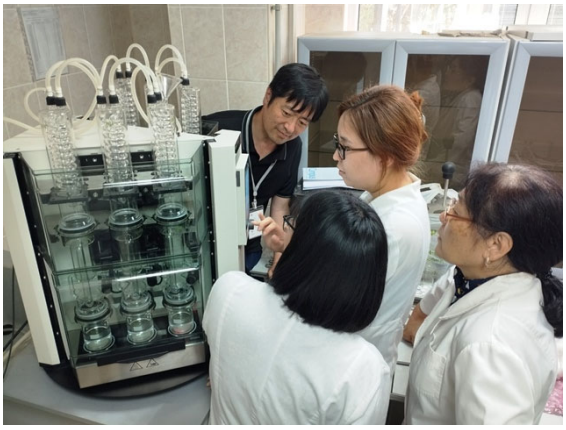
独立した３検査所への適合性評価能力向上のための現場での個別の実践的技術支援



化学分析研修(CVDE)
(GC/MS の操作指導)



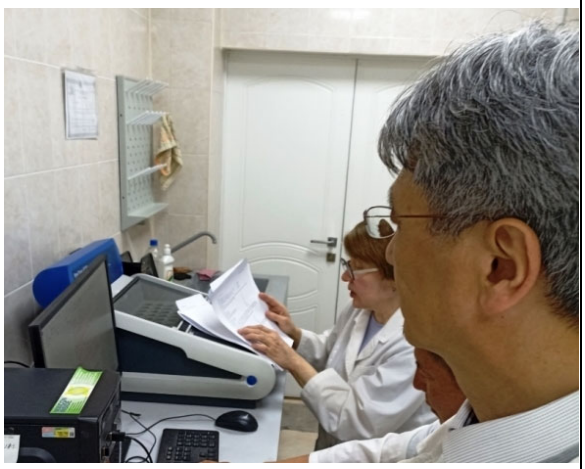
化学分析研修(DPSSES)
(HPLC の操作指導)



化学分析研修 (CSM)
(ソックスレー脂肪抽出装置の操作指導)

微生物検査研修 (DPSSES)
(標準菌株の保存実習)

微生物検査研修(CVDE)
(グラム染色と芽胞染色実習)

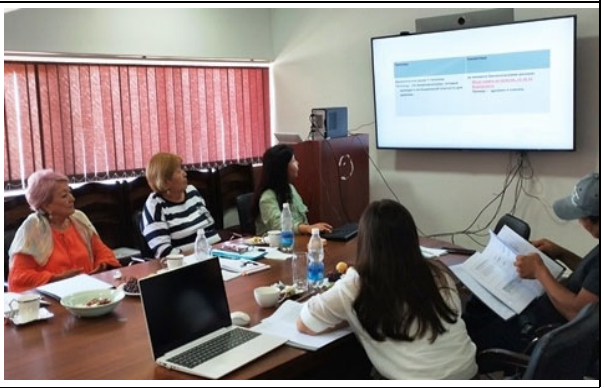


微生物検査研修(CSM)
(標準作業書の作成実習)

4. 成果達成のための各機関による個別の改善活動(HACCP 監査チーム)

プロジェクトで研修を受けたタスクチームメンバーが地方監査員や工場への HACCP 研修を TOT で実践指導

HACCP 研修(DPSSES)
TOT による地方監査員研修 (2022 年 7 月)



HACCP 研修(VS)
TOT による乳製品工場職員研修(2022 年 7 月)

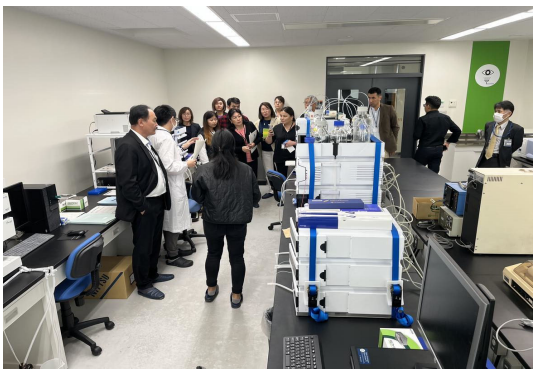
DPSSES 監査員による乳製品加工工場の
監査試行 2 回目 (2022 年 11 月)

VS 監査員による乳製品加工工場の
監査試行 2 回目 (2022 年 11 月)

5. 乳品質向上のための食品検査技術及び HACCP 監査研修 (本邦での技術研修)

2019 年に新型コロナ感染拡大のため本邦研修も延期され、2023 年 2 月と 10 月に 2 回実施された。食品安全行政機関による講義、食品検査ラボ施設などの視察、ラボでの分析実習、研修成果の整理とアクションプラン案の作成などが行われた。

2023 年 2 月の本邦研修 (第 1 回, 2/1 - 2/16)
東京都による食品安全行政の取組みをヒアリング



2023 年 10 月の本邦研修 (第 2 回, 10/4 - 10/20)
食品検査施設の視察と活動内容のヒアリング

6. 地方における食品衛生管理状況確認と研修ニーズ調査

2023 年 2 月の本邦研修後、C/P 作成のアクションプランからプロジェクト実施後の地方への活動拡大について

<table>
<tr><td colspan="2">要請があり、地方の乳製品バリューチェーンにおける衛生管理状況の確認と研修ニーズ調査を行った。</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>地方の酪農家における衛生状況確認（タラス）</td><td>地方の保健省食品検査所の活動状況調査（タラス）</td></tr>
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図表リスト

用語集

日本語	英語
キルギス国　乳品質向上のための食品検査人材育成プロジェクト	Project on Improvement of Human Resources in Food Laboratories for Improvement of Quality of Milk and Dairy Products (FLAQUM)
キルギス共和国	The Kyrgyz Republic
経済商務省	Ministry of Economy and Commerce (MOEC)
技術規則と度量衡部	Department of Technical Regulations and Metrology
適合性評価とハラル産業課	Division of conformity assessment system regulation and halal-industry
度量衡センター	Center for Standardization and Metrology (CSM)
食品検査所	Testing laboratory of food and agricultural products
保健省	Ministry of Health (MOH)
疾病予防衛生疫学監督部	Department of Disease Prevention and State Sanitary and Epidemiological Surveillance (DPSSES)
中央検査所	Laboratory Testing Center
非感染症及び衛生監督部	Department of Noncommunicable Diseases and Sanitary Surveillance
農業省	Ministry of Agriculture (MOA)
獣医衛生検査院	Veterinary Service under Ministry of Agriculture (VS)
獣医診断検査センター	Center for Veterinary Diagnostic and Expertise (CVDE)
獣医監査部	Department of State Veterinary Supervision
キルギス認定センター	Kyrgyz Center for Accreditation (KCA)
キルギス国立技術大学	Kyrgyz State Technical University (KSTU)
食品トレーニング技術センター	Training and Practical Center “Technologist”
ユーラシア経済同盟	Eurasian Economic Union (EAEU)
ユーラシア経済委員会	Eurasian Economic Commission (EEC)
適合性評価	Conformity Assessment
化学分析	Chemical Analysis
微生物検査	Microbiological Testing
内部精度管理（内部品質管理）	Internal Quality Control
分析方法の妥当性確認	Method Validation
検証	Verification
技能試験	Proficiency Testing (PT)
標準物質	Reference Material (RM)
測定の不確かさ	Measurement Uncertainty
（食品）工場監査	(Food) Factory Inspection
衛生管理	Hygiene control
適合性宣言	Declaration of Conformity
マスタープラン	Master Plan (M/P)
獣医衛生証明書	Veterinary Sanitary Certificate
国際協力機構	Japan International Cooperation Agency (JICA)

度量衡
メートル法に準じる

2023年12月における通貨換算レート
（出所：JICA）
US$ 1.00 = J¥ 147.298000
KGS 1.00 = J¥ 1.655420
（KGS: キルギスソム）

第１章　プロジェクトの概要

第１章　プロジェクトの概要

1-1　プロジェクトの背景

キルギス共和国（以下、「キルギス」とする）の農業セクターは、対 GDP 比の 10.9%及び輸出額の 13.0%（約 3.0 億 USD）を占め、労働人口の約 18%が従事している基幹産業であり、中でも酪農セクターは農業生産額の約 23%を占めている。キルギスにおける農業の役割はますます重要となっている（キルギス国家統計委員会* 2022 年データ）。

特に乳製品は主要産品として周辺諸国への更なる輸出拡大が期待されており、キルギスが 2015 年８月にユーラシア経済同盟(以下「EAEU」とする)に加盟し関税が撤廃されたことも相まって、プロジェクト開始の 2019 年以後も EAEU 加盟国であるカザフスタン、ロシアが 2 大市場として年々拡大している。(* National Statistical Committee of the Kyrgyz Republic, http://www.stat.kg/en/)

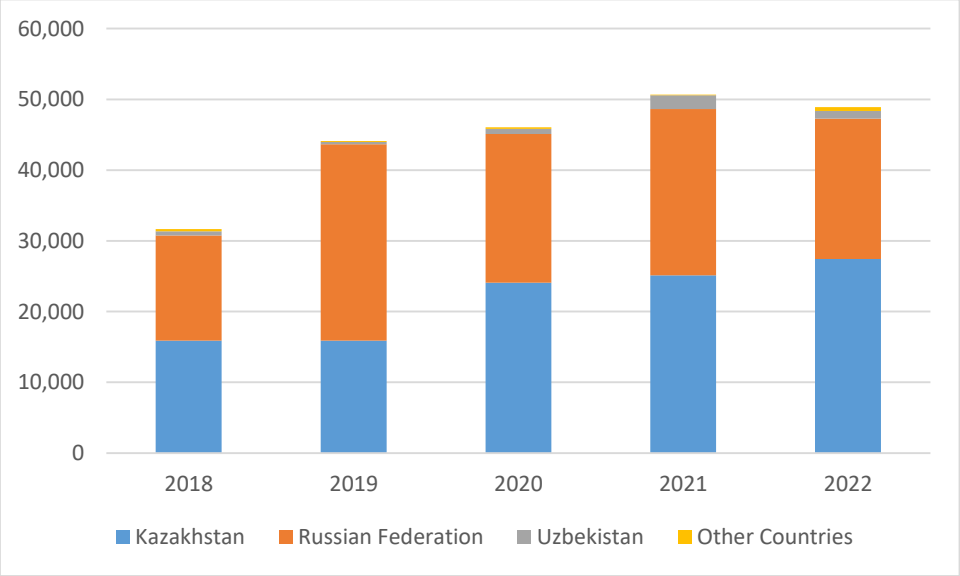


図 1-1 過去５年間のキルギス乳製品輸出の推移

（出所：Trade Map
https://www.trademap.org/Country_SelProductCountry_TS.aspx?nvpm=1%7c417%7c%7c%7c%7c04%7c%7c%7c2%7c1%7c1%7c2%7c2%7c1%7c2%7c1%7c1%7c1 ）

乳・乳製品の品質と安全性確保における検査体制を整備するためにキルギス政府からの要請を受けて、JICA は「乳・乳製品の品質及び安全性検査マスタープラン(M/P)」プロジェクト（2015 年 8 月～2017 年 1 月）を実施し、5 つの優先プロジェクトを選定した。このうち生乳生産分野では、搾乳衛生技術の改善を目的とした技術協力「チュイ州市場志向型生乳生産プロジェクト」が 2017 年 7 月から 2022 年 6 月まで実施されてきた。

EAEU 域内でキルギスの乳・乳製品を製造・流通させるためには、国としてその品質と安全性を保証する必要があるが、対応は十分とは言えない。そこで、キルギス政府は乳製品バリューチェーンの各段階において、生乳や乳製品の検査と製造工程の監査を担当する３省庁（経済商務省、

保健省及び農業省）の担当機関を対象として、監督機関としての検査や監査業務の信頼性確保と人材育成を目的とした「乳品質向上のための食品検査人材育成プロジェクト」が、我が国に要請された。本プロジェクトは、上記 M/P で選定された 5 つの優先プロジェクトのうち 2 つ（食品検査体制の近代化と HACCP 導入のプロジェクト）を含むものである。

2018 年 10 月 9 日にキルギス政府と JICA により署名された合意文書に基づき、JICA は海外貨物検査株式会社と一般財団法人新日本検定協会の共同企業体に本技術プロジェクトの実施を委託した。

1-2　プロジェクトの目的

キルギスにおいて乳製品バリューチェーン全体でEAEU技術規則への適合性を評価するシステムを整備することが要求されており、①検査機関の検査能力強化と②工場の製造プロセスにおけるHACCP原則に基づく管理についての監査能力の強化が必要である。本プロジェクトは、関係するそれぞれの監督機関が、国として信頼性のある適合性評価システムの整備をすることで、バリューチェーン全体の乳製品における品質と安全性確保を目指すものである。

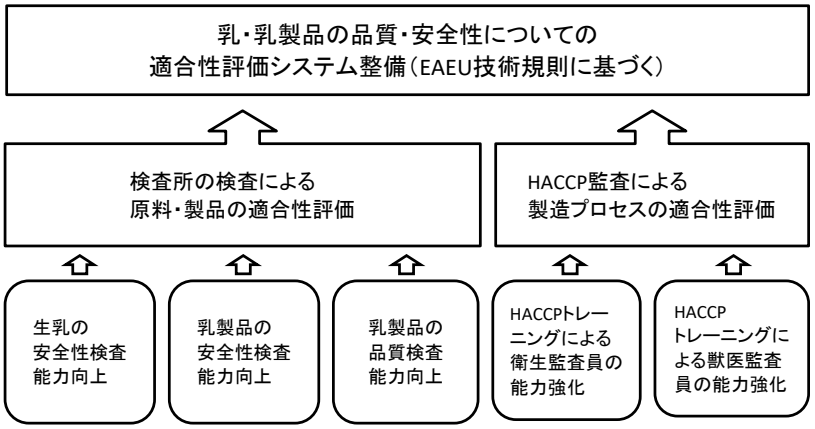


図 1-2 プロジェクト目標（適合性評価システム整備）とプロジェクト活動の関係

本プロジェクトは、プロジェクト・デザイン・マトリックス（以下「PDM」とする）で定義された以下の成果を発現し、プロジェクト目標を達成することを目的とする。

表 1-1　PDM の項目と内容

項目	内容
上位目標	乳製品の品質と安全性が確保されることにより、ユーラシア経済同盟(EAEU)加盟国に対するキルギス乳製品の輸出量が増加する。
プロジェクト目標	EAEU 技術規則に沿った乳製品のバリューチェーンにおける品質と安全性についての適合性評価システムが開発される。
成果１	実施機関の間で本案件における詳細活動及び実施体制について協議し合意する。
成果２	農業省・獣医衛生検査院(VS)及び獣医診断検査センター(CVDE)及び同地方検査所において、生乳の安全性と製造工程における適合性評価システム（技術及び

	人材面）が開発される
成果３	保健省(MOH)・疾病予防衛生疫学監督部(DPSSES)及びその地方検査所において、乳・乳製品の安全性及び製造工程の適合性評価システム（技術及び人材面）が開発される
成果４	経済商務省(MOEC)・度量衡センター(CSM)及びその地方検査所において、乳・乳製品の品質のための適合性評価システム（技術及び人材面）が開発される。
対象地域	ビシュケク及びチュイ州、イシククリ州、オシュ州
対象者	実施機関及び地方検査所の食品検査及び工場監査の職員
協力機関	キルギス国立技術大学、キルギス認定センター（KCA）、民間の乳業会社など

1-3　プロジェクトの期間（専門家現地業務渡航時期（日本からの遠隔研修期間を含む））

プロジェクトの全体期間は 2019 年 4 月～2023 年 12 月(4 年 9 ヶ月)で次の 2 期に分けられた。

第１期：2019 年 4 月～2021 年 12 月（変更契約により 1 年期間延期）

第２期：2022 年 1 月～2023 年 12 月（変更契約により終了時期を 4 か月間延長）

世界的な新型コロナウイルス感染拡大の影響により 2020 年 4 月からシャトルベースの派遣専門家によるキルギスへの渡航が出来なくなり、現地業務を国内に振り替えてプロジェクト活動を遠隔で実施してきた。しかし、大部分の活動は現地での業務が不可欠のため、プロジェクト、カウンターパート(C/P)機関及び JICA の 3 者協議に基づき第 1 期の計画期間を 1 年延長して行うこととなった。また、第 2 期の現地業務を第 1 期から切れ目なく行うことと第 1 期で実施できなかった活動を第２期で行うことから､第１期の契約履行期限前から第２期業務の締結手続きを進め、R/D による期間延長により 2023 年 12 月まで全体期間が延長された。

1-4　プロジェクトの実施機関

乳製品バリューチェーンの各段階で、生乳や乳・乳製品の安全と品質を確保する必要がある。原材料としての生乳生産段階、工場での製品製造段階、輸送や市場における流通段階のそれぞれの段階で、本プロジェクトのカウンターパート(C/P)は、食品安全リスクへの対応を政府の監督機関として下図に示す業務を行っている。

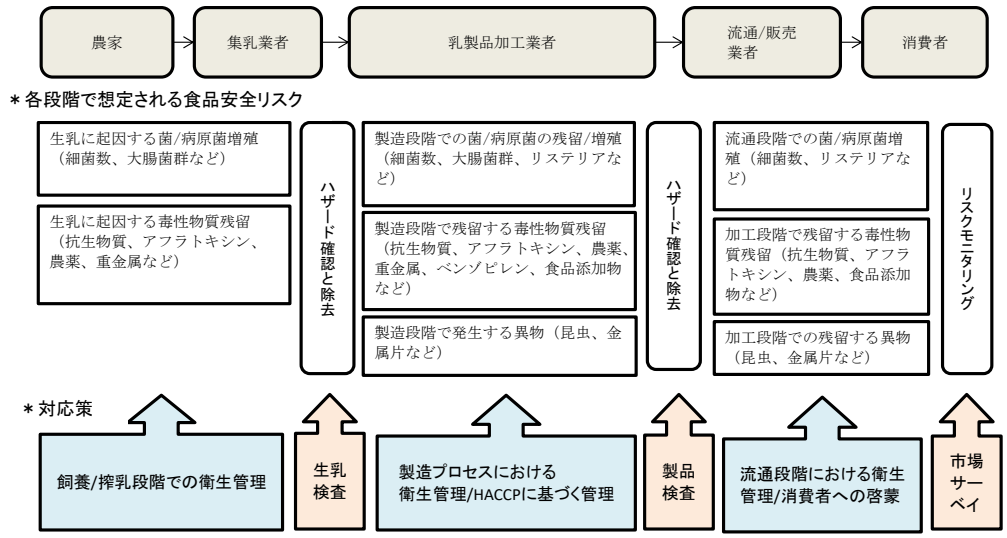


図 1-3　乳製品バリューチェーンの各段階で想定される食品安全リスクと対応策

〔生乳生産・集乳段階〕生乳を生産する農家は、健康な乳牛から安全な生乳を搾乳するために獣医師などの支援により乳牛や施設などの管理をしているが、搾乳や保管、集乳時における微生物汚染、飼料などからの毒性物質汚染、動物医薬品などの残留など生乳に起因する食品安全リスクがあり、そのリスクを確認し、流通させないための生乳検査が獣医衛生検査院や乳製品加工工場の受入検査で行われる。

〔乳製品加工段階〕乳製品製造プロセスにおいては、生乳などの原料や食品添加物などの副原料、製造機械などからの微生物、化学物質、異物などの食品安全リスクがある。技術規則によれば、HACCP 原則[1]に基づく製造プロセス管理を開発・実施・維持しなければならない。乳業会社は製造段階で品質や安全性を確認するための製品検査を行い、また保健省や農業省は食品工場の衛生管理の監督や検査を行っている。

〔流通消費段階〕加工工場から出荷され流通ルートに入り、販売店や消費者に至るまでに国内外の市場での流通や消費において、加工段階から残留する毒性物質や流通段階での交差汚染などの食品安全リスクがある。保健省は市場に流通している食品の検査などを市場サーベイなどでモニタリングしている。

表 1-2　乳製品バリューチェーンにおけるカウンターパート機関の役割

実施機関	乳製品バリューチェーンにおける役割
(1) 経済商務省（MOEC: Ministry of Economy and Commerce)	関係行政監督機関の管理及びユーラシア経済委員会(EAC)及び EAEU 加盟国との窓口
(2) 度量衡センター(CSM: Center for Standardization and Metrology)	加工業者からの適合性宣言申請などのための検査（製品の品質及び安全性）
(3) 保健省(MOH: Ministry of Health)	人の安全の観点から衛生・疫学的サービス（食品の製造から倉庫、販売までの施設の監査及び製品の検査）
(4) 疾病予防衛生疫学監督部(DPSSES: Department of Disease Prevention State Sanitary and Epidemiology Surveillance)	
(5) 獣医衛生検査院（VS: Veterinary Service under Ministry of Agriculture)	飼養/搾乳、集乳、加工段階における施設の衛生監査
(6) 獣医衛生検査センター（CVDE: Center for Veterinary Diagnostic and Expertise)	生乳など原材料の安全性検査（業者からの依頼及びモニタリング検査）

1-5　プロジェクトの実施体制

本プロジェクトの実施体制は、監督チームと実施チームからなる実施機関とそれらを支援する支援チーム（JICA 専門家チーム)、プロジェクトへの協力をする協力機関から構成される。

[1] HACCP 原則とは、危害要因の分析、重要管理点(CCP)の決定、管理基準の設定、モニタリング方法の設定、改善措置の設定、検証方法の設定、記録の保持までの７つの原則

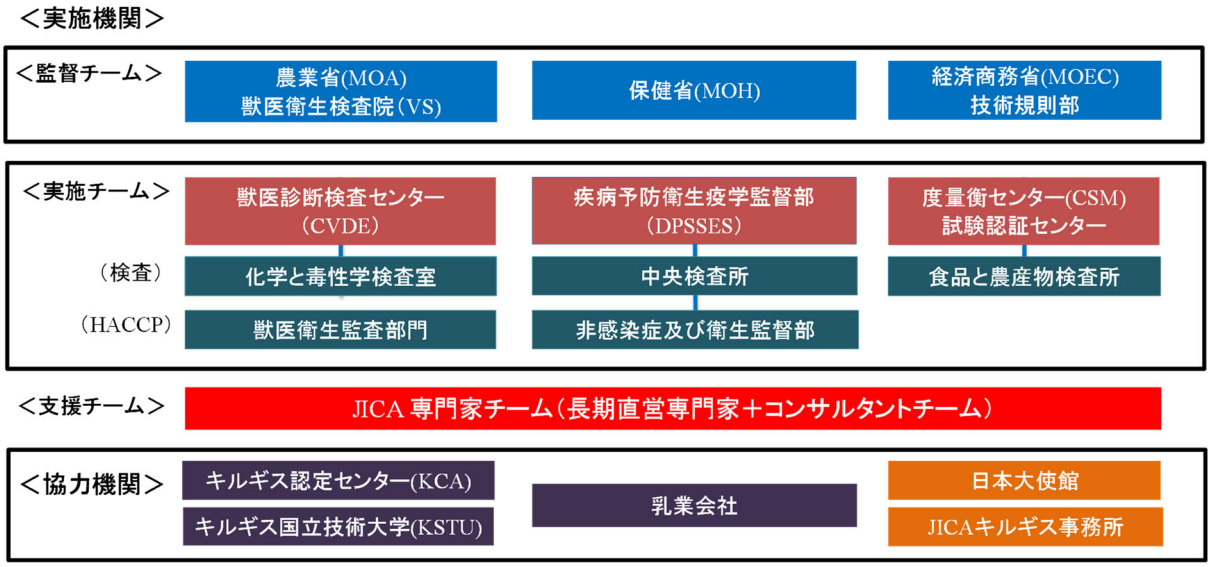


図 1-4 プロジェクトの実施体制

表 1-3　カウンターパート（実施機関）メンバーリスト（2023 年 12 月時点）

省庁	組織名	氏名	担当
経済商務省 (MOEC)	経済商務省(MOEC)	副大臣 Ms. Usenbekova Ainura	JCC 議長
	技術規則と度量衡部長	部長 Mr. Shadbanov Bakytbek	PD
	適合性評価システムとハラル産業課	課長 Ms. Galiia Abdynomunova	PM
	度量衡センター(CSM)認証と試験のビシュケクセンター	食品検査所長　Ms. Aksupova Aigul Mizabekovna	PM （ラボ）
保健省 (MOH)	疾病予防衛生疫学監督部 (DPSSES)	所長 Mr. Elden Kalchakeev	Deputy PD
		中央検査所長 Ms. Dzhumakanova Aigul Beishebaevna	PM （ラボ）
		非感染症予防及び衛生監視部長 Mr. Azamat Imakeev	PM (HACCP)
農業省 (MOA)	獣医衛生検査院 (VS)	所長 Mr. Ulugbek Kozhobergenov	Deputy PD
	国家獣医監視部	主任監査員 Ms. Gulmairam Iskembaeva	PM (HACCP)
	獣医診断検査センター (CVDE)	化学及び毒性学検査室長 Mr. Ermek Kumankulov	PM （ラボ）

（注）PD: Project Director, Deputy PD: Deputy Project Director, PM: Project Manager

1-6　プロジェクトの専門家チーム

プロジェクトに従事した専門家を以下に示す。

表 1-4　専門家（第 2 期）

＊長期派遣専門家

担当業務	氏名
チーフアドバイザー/法規制/関係機関調整/トレーニング監督	萩原　知

＊　2022 年 7 月 22 日に離任

＊コンサルタントチーム

担当業務	氏名
業務主任/食品安全管理/研修（HACCP 及びラボ）プログラム設計/経営指導	上野　一美
運営促進（2022 年 7 月上旬から現地業務に参加）	中谷　政義
HACCP 導入	波多野　衛
内部精度管理	照沼　如水
研修管理	兎内　文男
検査技術①（理化学検査）	長田　正大
検査技術②（微生物検査）	飯塚　信二
市場調査	深川　弘美

第２章　　プロジェクトの活動

第２章　プロジェクトの活動

2-1 プロジェクトの実施運営方法

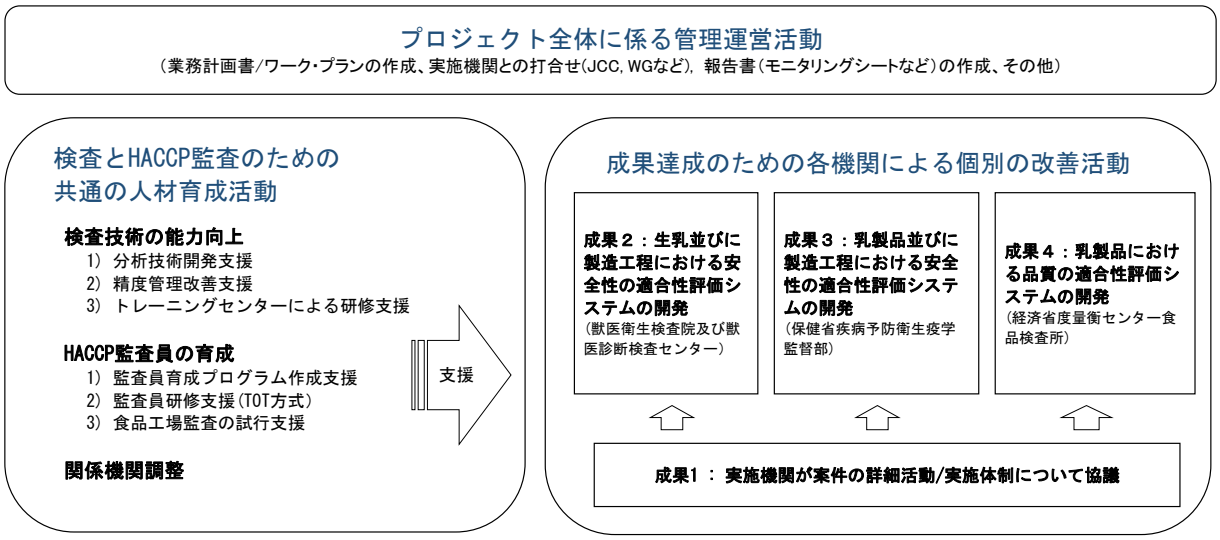


図 2-1 プロジェクトの実施運営方法

キルギスは EAEU 技術規則に基づいて食品安全や品質を確保するための対策を講じており、関係機関がバリューチェーンにおけるそれぞれの役割の中で、食品検査と工場監査における適合性評価の向上を目指している。プロジェクトでは、これらの実施主体であるキルギスの各行政機関が適合性評価システムを開発するために、検査能力の向上と HACCP 監査員の育成において、側面から技術面と人材育成面における促進支援をする。

プロジェクトの実施運営方法は、上図に示すように「プロジェクトの管理運営」、「関係機関共通の活動への支援」、「関係機関毎の固有の課題を改善する支援」の３つの柱から構成される。

業務計画の策定や実施機関や関係機関との活動内容や実施体制、報告書の作成などプロジェクトの管理運営を促進する「①プロジェクト全体に係る管理運営活動」、プロジェクトが適合性評価の活動における改善に必要な指導や技術移転を行うために関係機関に共通する支援を行う「②検査と HACCP 監査のための共通の人材育成活動」、関係機関毎の課題解決や能力向上のために固有の支援を行う「③成果達成のための各機関個別の改善活動」がその構成要素である。

2019 年 4 月から現地業務を開始し、①管理運営活動により関係機関及び専門家チームとの関係強化を図り、②検査と HACCP 共通の人材育成活動を通じ専門家と関係機関との技術面での関係構築・強化を図ってきた。しかし、2020 年 4 月からキルギスでの新型コロナ感染拡大により専門家の現地渡航が出来なくなり、国内業務による振替でプロジェクトを継続してきた。但し、その間ロシアからの検査所機材の搬入・据付が実施され、第 1 期の終盤になって専門家の渡航も可能になったことも相まって、③の各機関個別の改善活動が可能になった。第 2 期では、第１期に続いて JCC や WG 会議などの管理運営活動を行い、必要に応じて TOT による実践的な C/P による関係機

関の研修など人材育成活動を行ってきた。特に対象の各機関における個別ニーズへの対応や課題解決のための研修を集中的に行い、プロジェクト実施後も自立的に発展できる取組みができるように支援をしてきた。

2-2　プロジェクト全体に係る管理運営活動

2-2-1 プロジェクトの管理運営体制

プロジェクトの管理運営を行うキルギス側ワーキンググループ(WG)は、カウンターパート(C/P)のプロジェクト・マネジャー（PM）が主要メンバーであり、JICA の専門家チームとともに月例の WG 会議によりプロジェクトの運営・促進のため経済商務省技術規則部が中心となって協議を行ってきた。

プロジェクトの全体計画や運営方針などは、原則半年に 1 回開催される意思決定機関としての合同調整委員会(JCC)により承認される。その構成メンバーは、議長として経済商務省副大臣、監督機関、WG メンバー、プロジェクトの専門家チーム、JICA キルギス事務所などである。

プロジェクト活動の実施主体は、現場の管理者や技術者から選定されたタスクチームメンバーであり、その機能により検査チームと HACCP 監査チームに分かれている。プロジェクトの C/P は、実施計画に基づいて、専門家チームからの技術移転や支援を受けつつ、それぞれの組織の業務改善や人材育成、組織間の連携などを自律的に実施してきた。

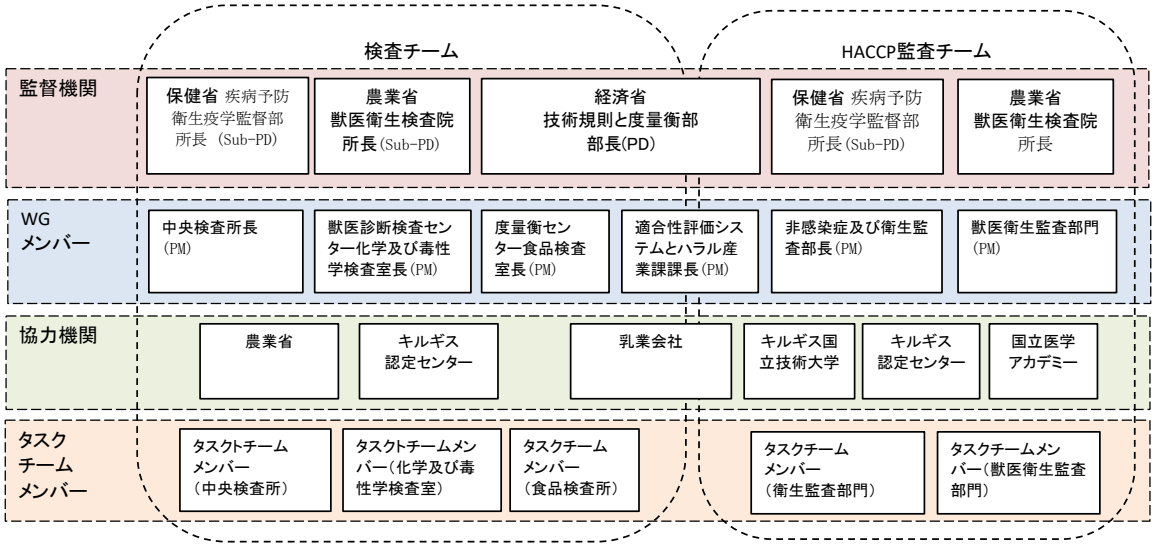


図 2-2　プロジェクトの管理運営体制（キルギス側）

2-2-2 合同調整委員会(JCC)会議（第 2 期）

JCC 会議	実施日	議題及び承認事項
第 4 回	2022 年 3 月 23 日	プロジェクトの活動実績と第２期のワーク・プラン
第 5 回	2022 年 11 月 30 日	PDM 改訂の承認とプロジェクト活動実績及び計画
第 6 回	2023 年 5 月 26 日	終了時評価調査報告・提言と本邦研修参加報告
第 7 回	2023 年 11 月 29 日	プロジェクトの成果報告と今後のプロジェクト構想提言

＜第 4 回 JCC ＞

第１期ではプロジェクトが各機関とマネジメントや共通技術を関係機関と連携して活動を進めてきたが、第２期ではそれらを踏まえて機関毎に必要な技術やニーズに応じて、より実践的な研修を進めていく方向性が理解されたと思われる。C/P がプロジェクトの具体的な活動とその成果を発表して、それぞれの機関における研修内容や成果の相互理解にも繋がった。

＜第 5 回 JCC ＞

C/P からプロジェクト実施後の期間延長についての要望があったが、後１年間のプロジェクト活動を通して、プロジェクトの中でできることやそれ以外について、C/P 及び JICA とも延長について協議・検討していくこととした。

＜第 6 回 JCC ＞

終了時評価調査団から、ほとんど全てのプロジェクト活動は計画通り実施され、プロジェクト目標も達成され、2023 年 12 月にはプロジェクトを終了することが結論として出された。また、キルギスの食品安全マネジメントシステム構築のためにチェックシートの統一やガイドライン案の策定が提言された。

＜第 7 回 JCC ＞

最後の JCC でもあり、検査チーム、HACCP 監査チームそれぞれからプロジェクト全体の活動と成果を発表し,プロジェクトが PDM の全ての目標とアウトプットの指標が達成されたことを報告した。参加した PM から JICA とプロジェクトへの謝意と今後の継続支援への要望が示された。また、経済商務省副大臣からは、JICA とプロジェクトに「協力に対する感謝メダル」が授与された。

2-2-3 ワーキンググループ(WG)会議

PM から構成されるワーキング（WG）メンバー会議を以下のように原則毎月 1 回のペースで実施した。第 2 期における主な協議内容は以下の通り。

表 2-1　WG メンバー会議における協議内容(第 2 期)

月日	WG 会議の議題	月日	WG 会議の議題
2022/02	ワーク・プラン（第２期）の説明	2023/01	---
2022/03	第 4 回 JCC での C/P による発表の協議	2023/02	（第１回本邦研修でアクションプラン作成）
2022/04	---	2023/03	（第１回本邦研修成果発表会）
2022/05	---	2023/04	終了時評価の説明と第６回 JCC 準備説明
2022/06	運営指導調査及び本邦研修について説明	2023/05	---
2022/07	PDM の指標改訂についての協議(1)	2023/06	---
2022/08	PDM の指標改訂についての協議(2)(Zoom)	2023/07	---
2022/09	PDM の指標改訂についての協議(3)(Zoom) 本邦研修のための C/P による資料説明	2023/08	エンドライン調査、地方研修ニーズ調査、第２回本邦研修説明
2022/10	PDM の指標改訂と第 5 回 JCC 準備説明	2023/09 2023/10	--- ---
2022/11	---	2023/11	第 7 回 JCC 会議準備説明
2022/12	---	2023/12	フォローアップ活動協議

業務従事月報は、専門家チームのチーフアドバイザー(CA)離任後も、前月分の活動報告として毎月 10 日前後に JICA に提出した。また、プロジェクト活動の要約版を Project activity report（英文）として作成し、経済商務省技術規則部と JICA に提出した。

2-2-4 業務完了報告書（第２期）

第２期の活動内容を半期毎にモニタリングシートとして取りまとめ、その報告内容を JCC で報告し承認を受けている。本プロジェクト全体の活動実績と成果を整理し、C/P 及び JICA と協議・合意の上、最後の第 7 回 JCC 会議で報告した。それを踏まえて、第２期の業務完了報告書を 2024 年 2 月 15 日までに JICA に提出する。

2-3 検査と HACCP 監査のための共通の人材育成活動

第 2 期の実施運営にあたり、「プロジェクト全体に係る管理運営活動」(関係機関へのマネジメント支援)、「検査と HACCP 監査のための共通の人材育成活動」により政府関係機関に対して全体としての共通支援を第 1 期からの継続活動としているが、第２期では特に「成果達成のための各機関による個別の改善活動」に重点を置いて、経済商務省、農業省、保健省の各機関それぞれのニーズに合わせて人材育成のための支援をしてきた。

プロジェクト目標としての「乳製品の品質と安全性についての適合性評価システムを開発」を行うのは各 C/P 機関であり、プロジェクトは技術面・人材育成面で側面支援することである。実施機関が、乳製品バリューチェーンにおいてその役割を認識し、それぞれ担当する領域で行政機能の強化や顧客サービスを提供していくことが、キルギス乳製品の信頼性の確保にもつながることから各 C/P が共通の人材育成活動を通して、プロジェクトの実施方針を認識することが重要である。

本プロジェクトは以下の特異的（ユニークな）特徴があることから、その特性に応じた実施方針で対応する。

・独立した５つの機関（３つの検査所と２つの監査組織）が対象で、個別の支援をする
・EAEU 技術規則の適合性評価に対応した検査技術及び監査技術の枠組みの中での協力をする
・目的が異なる規制機関(Regulatory body)への更なる機能の改善と強化
・プロジェクト実施後も独自に技術開発や組織改革、人材育成などの自立発展性につなげる

2-3-1 検査技術の能力向上

1) 分析方法の開発支援方針（理化学分析と微生物検査）

各検査所が、ロシアから供与された分析機器を活用して、それぞれの目的に合った分析技術を実施し、行政や顧客サービスのための信頼性が確保された分析方法の確立と専門家の能力向上のために、下図に示す「問題解決型アプローチ」を採用する。

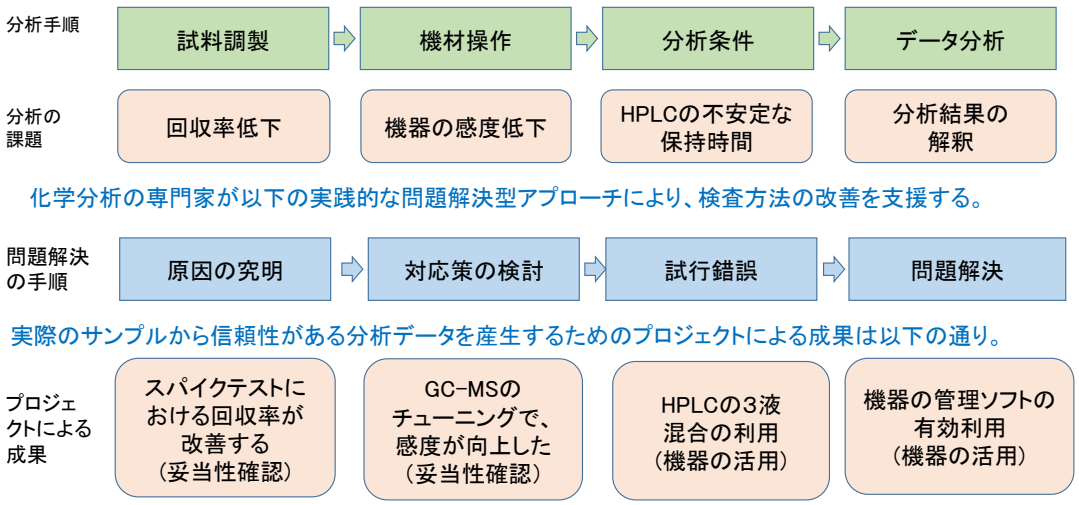


図 2-3　FLAQUM プロジェクトによるラボの問題解決型アプローチ

検査所及び分析の信頼性を向上させるためには、使用する機器の維持管理や日常的な精度管理、人材の継続的な育成などを総合的に整備することによる信頼性の高い分析方法の改善が必要である。後述する支援方針で示すように「分析方法の妥当性確認[1]」の強化を中心とする。

2)　検査所技術者の技術研修

a.　有能な検査所となるための能力基準

FAO ガイドラインによれば、食品の輸出入における検査所の能力評価のための品質基準は以下の通りである。(Guidelines for the Assessment of the Competence of Testing Laboratories Involved in the Import and Export Control of Food Guidelines | CODEXALIMENTARIUS FAO-WHO)

1. 試験所認定 ISO/IEC17025 における技術能力についての一般基準を遵守している
2. 食品分析のための適切な技能試験に参加している
3. コーデックス委員会の原則に従って妥当性が確認された分析方法を使用している
4. 内部品質管理の手順を使用している

プロジェクトで支援対象としている食品検査所は、既に試験所認定 ISO/IEC17025 をキルギス認定センター（KCA)から取得しており、他ドナーなどからの支援により FAPAS などによる技能試験も既に実施している。食品検査所において、信頼性が確保された検査を実施するためには、妥当性が確認された分析方法を使用し、内部品質管理を実施することが重要であり、プロジェクトではそれらの能力強化を促進する。

b.　プロジェクトが目標とするラボ技術者のレベル

プロジェクトは、検査所技術者の能力レベルを下表の通り設定しており、有能な技術者の能力レベルを表中のレベル７とする。プロジェクト開始後に実施した検査所技術者への分析技術やデ

[1] 分析方法の妥当性確認とは、使用する分析法が、意図する特定の用途に対して個々の要求事項が充たされていることを調査によって確認・検証し、客観的な証拠を用意すること。

ータ処理についての試験や対面指導などの結果から、本プロジェクトで支援対象の技術者は、分析を実施するための十分な知識と経験を持っていることが判明している（レベル 1-6)。

表 2-2　プロジェクトにおける検査所技術者の能力レベル

レベル	分析技術	データ処理技術	FLAQUM の技術移転	備考
1	器具洗浄、試薬調製	実験ノート作成		支援対象のラボ技術者は､既に分析技術とデータ処理の基礎についての知識と経験を持っていることが判明している。（レベル 1-6）
2	純水の取扱い	統計基礎		
3	試料調製	品質管理		
4	廃水処理	統計処理		
5	機器維持管理	内部品質管理	機器維持管理研修	
6	技能試験	統計解析	統計解析研修	
7	妥当性確認	測定不確かさ	妥当性確認研修	プロジェクトが目指すレベル
8		試験所間比較	分析方法開発	

支援項目としての妥当性確認や内部品質管理についても検査所技術者は、他ドナーなどからの研修を通じて基本的な知識を有しており、日常の分析手順にも妥当性確認や内部品質管理のプロセスが含まれているが、専門家の視点からすると現在実施されている方法では十分とは言えず更に実践的な研修を受け、経験を積むことで確実に実施できるようになることが重要である。

専門家が各ラボが実施している分析手法を妥当性確認の観点から見直し、必要な改善を行うことを通して研修を実施し、それが技術者の知識と経験につながったことを個々の技術者におけるスキルを評価・判断し、当該技術が習得されたこととする。(下図の試験項目のスキルレベルが研修により向上し３以上となったことを技術者が有能なレベルになったことと定義する)。

2023年度　ラボ技術者スキルマップ(例)
(化学分析)

ラボ名:XXXX
氏名:　XXXX

試験項目 評価基準: 1 一人で試験できないが、理解している。 2 手順書をみて補助があれば実施できる。 3 作業を理解し、一人で実施できる。 4 作業を熟知し、指導できる。

使用機器 評価基準: 1 一人操作できないが、理解している。 2 手順書をみて補助があれば操作できる。 3 機器を理解し、一人で操作きる。 4 機器を熟知し、メンテナンス・指導できる。

作成	確認	承認

文書番号	
作成日	
改定日	
版数	

業務スキル(試験項目・使用機器)			(記載例)	2022/10/14	2023/6/6	2023/8/25						
項目	No.	試験項目										
試験項目	1	はちみつ中のヒドロキシメチルフルフラールの分析	4	3	3	3						
	2	はちみつ中の糖の分析		2	2	2						
	3	はちみつ中のクロラムフェニコールの分析		3	3	3						
	4	ビタミンB1,B2の分析		2	2	2						
	5											
	計		4	10	10	0	0	0	0	0	0	0
使用機器と操作	1	HPLCの操作　Operation of HPLC	4	2	2	2						
	2	LC-MSの操作　Operation of LC―MS			2	2						
	3											
	4											
	5											
	6											
	計		4	2	4	0	0	0	0	0	0	0
試験項目＋使用機器計			8	12	14	0	0	0	0	0	0	0

※評価基準を達成したら「■」に更新する。

【改定履歴】

版数	改定年月日	改定内容	部門	氏名
△1				
△2				
△3				

【備考欄】

図 2-4　ラボ技術者スキルマップ（化学分析の例）

2-3-2　HACCP 監査員への技術研修

関係する規制機関の監査員は、行政監査をするための専門的な知識（食品衛生など）を有しており、既に食品工場の営業許可や衛生管理などの監査や EAEU 規制を遵守した工場の監査などを現場で行っている。更に今までも HACCP や食品安全に関連する研修を他ドナーなどから既に受けていることから、監査員としての知識や経験のベースがあると言える。

但し、キルギスでは食品認証(ISO22000 など)を取得している企業が少なく、モラトリアムにより工場監査への規制があったため、今まで現場で十分な監査をする機会が少なかったこともあり、HACCP 監査能力強化が困難な状態が続いていた。

既存の工場監査用チェックシートは、原則年 1 回行う監査の頻度を判断するためのものであり、一部 HACCP 項目も含まれているが、HACCP 原則に基づく監査を実施するには十分とは言えなかった。また、FAO の Codex 基準に基づく HACCP 原則の要求事項も追加・修正されていることから、国際的な食品流通にはチェックシートを改善する必要があった。

日本を含めて世界的に HACCP 導入や食品認証の取得が進む中で、中小企業への HACCP 導入の必要性が増してきたことから、本プロジェクトでは日本の HACCP 監査員育成のための研修やチェックシートなどを参考として、研修プログラム作成や監査員研修、それを実践する工場監査の試行などで HACCP 監査能力の向上を図ってきた。また、本邦研修の結果なども基に監査員の研修や行政システム改善への助言も行ってきた。

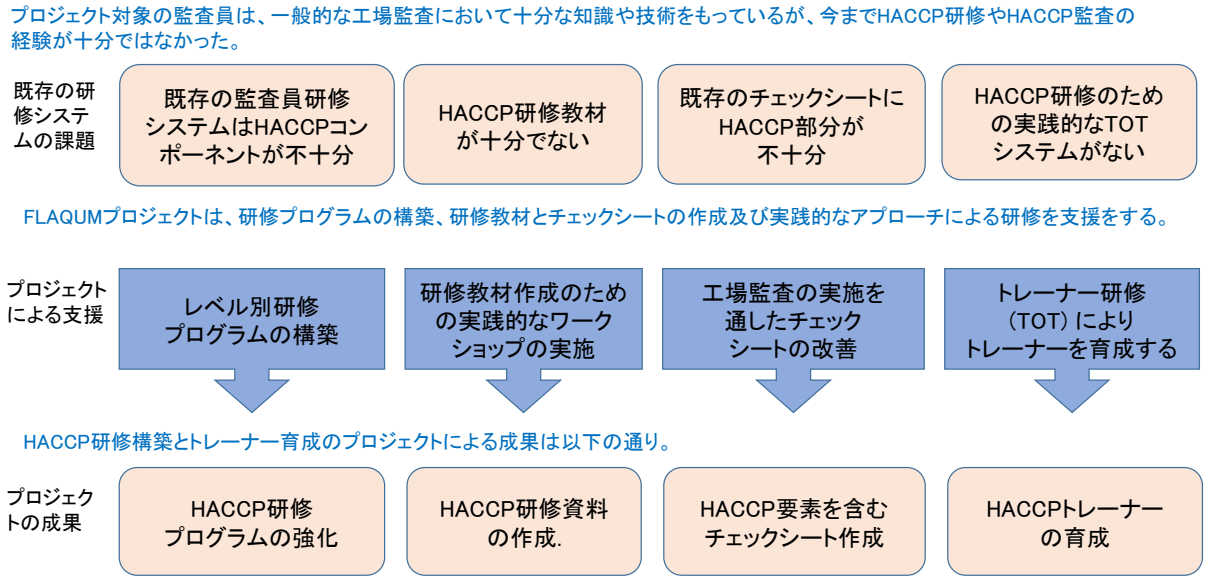


図 2-5　FLAQUM プロジェクトによる HACCP 監査員育成の問題解決型アプローチ

2-4 成果達成のための各機関による個別の改善活動

2-4-1 成果１に係る活動

成果１：実施機関が案件の詳細活動/実施体制について協議

(1) エンドライン調査の実施

a. エンドライン調査チーム

エンドライン調査は、乳・乳製品における国内外の市場状況、EAEU 技術規則や検査所の現状などについてベースライン調査結果との比較を目的とした。技術規則を調査するローカルコンサルタントと市場調査を行う日本人専門家が連携して、エンドライン調査報告書を取りまとめた。

なお、調査員の選定は、2019 年７月にベースライン調査を委託したローカルコンサルタントの１者の見積合わせによる随意契約にて行った。

表 2-3 エンドライン調査チーム

担当分野	調査員名	調査期間	業務内容
キルギス乳・乳製品の市場調査	深川　弘美（コンサルタントチーム専門家）	2023 年 8 月	乳・乳製品の市場情報収集
EAEU の法令と適合性評価	Ms. Kozlova Larisa,	2023 年 8 月～９月	EAEU 技術規則最新情報及びキルギスの食品検査所の現状と課題、他ドナーによる支援内容

b. エンドライン調査における調査内容

エンドライン調査は、2023 年 8 月から 9 月まで実施され、その調査報告書（ロシア語版と英語版）は C/P 及び JICA に提出された。その内容と調査結果は以下の通り。

表 2-4　エンドライン調査における調査内容

	調査項目	実施主体	調査結果
キルギス酪農産業の現状	生乳・乳製品生産の現状	日本の市場調査専門家によるキルギス乳製品市場調査	乳製品生産量の増加は、地方の登録企業数の増加による
EAEU 域内への輸出の現状	EAEU 市場における貿易の現状	日本の市場調査専門家によるキルギス乳製品市場調査	更なる輸出拡大には貿易相手国の多様化が必要
食品安全法規及び規制	乳・乳製品の安全性に関する法的・制度的システム	ローカルコンサルタントによる食品安全規制調査	乳･乳製品の安全に関する EAEU 法改正への対応が急務
検査所の現状	検査所のプロジェクト実施前途の能力・サービス比較	ローカルコンサルタントによる検査所の現状調査	検査所技術者の 70%以上が満足のいく資格レベルを取得
他ドナーの支援	国際ドナーによる技術プロジェクト	ローカルコンサルタントによるドナー支援調査	FAO, 世界銀行、ドイツ PTB などのプロジェクト実施状況

(2) PDM 指標の具体化

PDM に関して、2022 年６月に実施された運営指導調査において JICA 本部の担当者により終了時評価に備えるためにも PDM 指標改訂への検討が提言された。その後ワーキンググループ(WG)での協議を経て、PDM ver.5.0 が以下のように ver.6.0 に変更され、2022 年 11 月 30 日の第 5 回 JCC でその改訂が承認された。

表 2-5　PDM 指標などの改訂前後の比較

	PDM ver.5.0	改定後 PDM(ver.6.0)	備　考
プロジェクト目標 乳製品のバリューチェーンにおける品質と安全性のための適合性評価システムが EAEU 技術規則に従って開発される。	プロジェクト活動により妥当性が確認又は検証された分析方法による検査証明書（プロトコル）数が10%増加する。	プロジェクトの活動により妥当性が確認/検証され信頼性が確保された方法の数が 10%増加する。	プロジェクト前後で妥当性が確認された方法で実施されたかどうかを確認することは困難であり、更に証明書に記載される分析項目数なども異なることから、修正が検討された。
	検査所の質管理は適切な分析手順により管理される。	検査所の質管理を改善するための管理書類の数がプロジェクト活動により増加する。	管理書類には、標準作業手順書(SOP)、機器維持管理・日常点検のための書類が含まれる。
	(HACCP 監査についての指標なし)	HACCP 監査のための監査員用チェックシートが開発され、経済商務省に承認される。	HACCP 監査用チェックシートは、監査員による監査の平準化のために重要である。DPSSES と VS 双方で、開発と承認の段階は異なる可能性はある。
アウトプット１ 実施機関がプロジェクト活動の詳細と実施体制について協議・同意する。	人材開発育成 5 カ年計画がキルギス政府により策定され、プロジェクト終了後実施される。	部門毎の 3 カ年人材開発育成計画と研修プログラムが作成され関係機関の長に承認され、プロジェクト終了後に実施される。	プロジェクト活動を通して各機関の方向性が明確になり、3 カ年人材育成計画が策定され、所属長に承認される（それぞれの機関で活動内容が異なるため)。
アウトプット２ CVDE と VS による生乳と生産過程の安全性のための適合性評価システムが技術と人的資源の観点から開発される。	HACCP 監査研修プログラムは基礎、シニア、トレーナーレベルで開発される。	HACCP 監査研修プログラムが開発され、工場での研修などで改訂される。そして、農業省 VS 所長により承認される。	HACCP 研修プログラムが開発されるだけではなく、工場監査や研修実施などにより改訂され、所属長により承認される。
	(TOT 研修についての指標なし)	TOT プログラムが計画実施される。	TOT プログラムは今後の研修機能拡大に必要である。
アウトプット３ DPSSES による乳製品と生産過程の安全性のための適合性評価システムが技術と人的資源の観点から開発される。	HACCP 監査研修プログラムは基礎、シニア、トレーナーレベルで開発される。	HACCP 監査研修プログラムが開発され、工場での研修などで改訂される。そして、保健省 DPSSES 所長により承認される。	HACCP 研修プログラムが開発されるだけではなく、工場監査や研修実施などにより改訂され、所属長により承認される
	(TOT 研修についての指標なし)	TOT プログラムが計画実施される。	TOT プログラムは今後の研修機能拡大に必要である。

2-4-2　成果２に係る活動（獣医衛生検査院(VS)及び獣医診断検査センター(CVDE)）

成果２：生乳並びに生産・製造工程における安全性の適合性評価システムの開発

(1) 獣医衛生検査院の監査員向け HACCP トレーニング

1) 乳製品加工工場への監査試行

C/P が選定した協力工場（乳製品加工会社）に研修の一環としてタスクチームメンバーとプロジェクト専門家が食品工場監査試行を行った。HACCP 導入済と未導入の工場における監査を実施によりその違いを理解することも目的であった。実施後の検討会により監査員や専門家との意見交換をすることで研修の効果がより深まったと思われる。HACCP 未導入の会社への HACCP 研修の実施や第２回の監査員試行（「第３章プロジェクトの成果」で C/P 自らが実施した監査試行の実施成果として説明）で指摘項目の改善状況を把握するなど、多面的な監査業務の試行により監査員にとって効果的な研修となったと思われる。

a. 乳製品加工工場監査試行の実施（第１回）

プロジェクトへの協力工場として受け入れられた乳製品加工会社 2 社に対し、TOT 研修として監査員向けの工場検査試行を実施した（HACCP 未導入工場、HACCP 導入済み工場各 1 社）。

日付	2022 年 2 月 24 日	2022 年 3 月 3 日
会社名	Sutash	Kant Sut
対象商品	チーズ（オランダチーズ）	牛乳、チーズ、バター
参加者	キルギス側：VS 6, MOEC 2 日本側：プロジェクト 5, JICA 2 (MOEC と JICA はオブザーバー参加)	キルギス側：VS 7 日本側：プロジェクト 5
HACCP	未導入	ISO22000 認証済
検討会	2022 年 3 月 1 日	2022 年 3 月 9 日

工場監査試行後の検討会における参加者他からのコメント：

- タスクチームのメンバーは、HACCP を導入している工場と未導入の工場の両方の工場視察試験を通じて、監査経験を蓄積することができた。
- Kant Sut の QC マネージャーから工場により HACCP 導入の仕方や対応が異なるとのコメントあり
- モラトリアム措置のために工場検査を経験できなかった若手監査員たちは、実地研修を通じて検査方法や手順の重要なポイントを学んだ。

オブザーバー参加の経済商務省（Ms.Galiya)からのコメント：

- 人数が多かったこともあるが、各監査員からの質問に統率が取れていず、各グループのチームリーダーや JICA 専門家がもっと主導すべき。
- 監査前の指示やシミュレーションが不十分の印象を受けた。

工場監査試行実施から得られた主な課題と対応案

- 日本の食品衛生監視票を基に作成したチェックシートで監査を試行したが、それに不慣れなこともあり、監査を通じて工場の実態確認をする活動ができていなかった。
  ⇒　今後複数回研修を実施することでスムーズな監査ができるよう指導をする
- 監査員の中には過去に実施した研修内容を十分に理解していないものもおり、HACCP 導入済工場の担当者と HACCP に関する知識の違いが浮き彫りになった場面もあった。
  ⇒　習熟度テスト、工場側への研修実施により HACCP に関する能力強化を促す。

- 監査に関する事前準備が不十分でチェックシートを読み上げる一方的な監査になった。⇒研修としての意義は大きかったが、監査には今後効果、効率の両面で改善が必要。

b. 工場監査試行を実施した協力工場への HACCP 研修

上記 a. で訪問した HACCP 未導入工場に対して、HACCP 研修を行った。

・日程：2022 年 7 月 18 - 19 日

・出席者：Sutash から２名

・講師：VS 4 名

・研修内容：食品衛生法令、食品危害とその管理、HACCP 7 原則

演習：製品仕様書作成、製品製造フロー作成、危害分析表作成、HACCP 計画作成と発表

2) 農場・集乳場への監査試行

獣医衛生(VS)監査員への酪農場での監査試行を以下の通り実施した。

a. 酪農場の監査実施準備のための農場衛生管理点検表の作成

（北海道で使用されている「酪農場衛生管理点検表」を参考にキルギス版の酪農場衛生管理点検表を出席者と一緒に作成した）

日時	2022 年 12 月 21 日（水）9:30～12:00
場所	農業省獣医衛生検査院(VS)会議室
参加者	VS：タスクチームメンバー（6 名）、地方監査員（6 名） 専門家（1）、アシスタント（1）
研修内容	酪農施設及び搾乳・集乳段階における衛生管理研修 農場衛生管理点検表の作成

＜点検表の構成＞

施設管理の評価ポイント：畜舎周辺、畜舎施設、生乳処理室の衛生管理

飼養管理の評価ポイント：飼養牛、搾乳衛生、飼料・肥料、動物用医薬品、ふん尿・廃棄物の衛生管理

総合得点 200 点の内、判定基準は 90%以上で大変良好、70-90%で概ね良好
50-69%で一部改善が必要、49%以下で全体の見直しが必要
農場の衛生管理状況への取組みが分かり、監査員が改善点を指摘できる。

b. 酪農場での監査試行

日時	2023 年 1 月 17 日（火）9:30～14:00
場所	チュイ地方ソクルク地区、酪農場
参加者	VS：タスクチームメンバー（6 名）、地方監査員（4 名） 専門家（1）、アシスタント（1）
研修内容	上記 a で作成した酪農場衛生管理点検表を使って、実際の酪農場で点検実習を実施した。

農場監査試行における農場からのコメント：

- 適切な機能を有する生乳タンカーが少ない
- 酪農家に対する技術改善活動が少ない
- 酪農場における抗生物質の適正管理が整っていない

農場監査試行における監査員からのコメント

- 酪農現場での活動が十分でない
- 酪農場や乳業会社などでの実践的な研修が望ましい。

(2) CVDE 検査所への問題解決のための指導内容と成果（化学分析分野）

化学分析専門家は、第１期から継続して C/P からの要望を基に、主要機器と既存の分析方法を確認し、信頼性が確保された分析結果を産出するために機器の安定化やメンテナンス、機器を有効に活用する技術、目的に合った試料の前処理など分析の妥当性確認を中心として技術移転を行った。技術移転に使用した主な機器と分析項目は以下の通りである。

主要機器	液体クロマトグラフ(LC, LC-MS/MS)	ガスクロマトグラフ(GC, GC, GC/MS)
機器メーカー	島津製作所	島津製作所
分析項目	抗生物質、アフラトキシン	農薬

表 2-6　CVDE における化学分析専門家による主な指導内容とその成果

実施時期	主な指導内容と技術移転分野	成果（指導の詳細及び改善事項）
2021.5-6	GC、GC-MS、LC-MS/MS の使用方法 ＜メンテナンス技術＞	GC の感度が 30%向上。GC/MS のチューニングにより感度向上
	GC-ECD による乳中の塩素系農薬の分析 ＜妥当性確認＞	感度が変動しないように毎回測定時に検量線作成を指導
2021.10-11	GC、GC-MS、LC-MS/MS のメンテナンス ＜妥当性確認＞	LC-MS/MS で繰返し注入による再現性を確認中、カラムからの液漏れがあり、部品を洗浄して感度が安定した。 GC のベースラインのノイズ対策のため、検出器の温度を上げて汚れを追い出す方法を指導
	HPLC、LC-MS/MS の測定条件作成 ＜妥当性確認＞	アフラトキシン M1 の標準溶液を使用し、HPLC の測定条件策定法を指導
2022.5-6	GC,GC-MS のエラー対処及びメンテナンス ＜メンテナンス＞	GC-MS のオートインジェクター、GC 注入口の故障原因の究明とメンテナンスなどによる対応方法の指導
	塩素系農薬の分析及び定量計算 ＜妥当性確認＞	QUECHERS 法による鶏肉の BHC 分析で既存方法と指導後でスパイク試験での回収率が向上した。
	アフラトキシン M1 の分析及び定量計算 ＜機器の有効活用＞	HPLC によるアフラトキシン M1 の測定で保持時間の不安定の問題について、HPLC の１液送液と３液混合を比較して後者が安定した測定ができることが判明した。
2022.9-10	GC,GC-MS のエラー対処及びメンテナンス ＜メンテナンス＞ ＜妥当性確認＞	GC,GC-MS の塩素系農薬測定における感度、検量線の直線性等妥当性確認
	GC 及び GC-MS による塩素系農薬（新規項目：アルドリン、ヘプタクロル）の測定 ＜妥当性確認＞	GC、GC-MS の既存の塩素系農薬測定条件で新規にアルドリン、ヘプタクロル測定を実施できることが確認された。妥当性が確認された。
	HPLC によるはちみつ中の 5-ヒドロキシメチルフルフラールの測定（新規対応）	新たにはちみつの HMF 測定の要望があり、GOST の条件を修正して短時間での測定条件を検討した。回収率は 93%などの妥当性確認をして、SOP 作成が予定される。
2023.5-6	LC-MS/MS の使用方法及び点検 ＜機器の有効活用＞	機器の真空起動後の待機。マニュアルに記載されているメーカー推奨の使用方法の指導。チューニングの実施。MS 条件の最適化。LC 条件の作成。
	GC-MS の使用方法及び点検 ＜機器の有効活用＞	GC-MS を使用する検査員の育成。本装置を使用したことのない検査員に操作方法のトレーニングを実施した。チューニング、測定メソッドの作成、解析。SOP の改訂予定。
2023.8	GC-MS によるダイアジノン（農薬）の測定 ＜妥当性確認＞	GC-MS 起動、チューニング、真空度の確認。 ダイアジノン（農薬）SCAN 測定。SIM メソッド作成。検量線作成用標準溶液の測定。

		はちみつ、飼料の抽出(QUECHERS)，GC-MS 測定、検量線の作成。測定及び解析方法の確認。
2023.11	GC-MS による FAPAS 試料測定 ＜妥当性確認＞	GC-MS 起動、チューニング、真空度の確認。 標準溶液の SCAN 測定（FAPAS16 種混合液）と解析

2-4-3　成果３に係る活動（保健省疾病予防衛生疫学監督部(DPSSES)）

成果３：乳・乳製品並びに製造工程における安全性の適合性評価システムの開発

(1) 食品衛生監査員向け HACCP トレーニング

1) 乳製品加工工場への監査試行

2-4-3 で述べた獣医衛生検査院(VS)の監査員向けの HACCP トレーニングと同様に疾病予防衛生疫学監督部(DPSSES)でも監査員向けの同様な監査試行研修を実施した。実施後の検討会により監査員や専門家との意見交換をすることで研修の効果がより深まったと思われるし、又 HACCP 未導入の会社への HACCP 研修の実施や第２回の監査員試行（「第３章プロジェクトの成果」で監査試行の実施成果として説明）で指摘項目の改善状況を把握するなど、多面的な監査業務の試行により監査員にとって効果的な研修となったと思われる。

a. 乳製品加工工場監査試行の実施（第１回）

プロジェクトへの協力工場として受け入れられた乳製品加工会社 2 社に対し、TOT 研修として監査員向けの工場検査試行を実施した（HACCP 未導入工場、HACCP 導入済み工場各 1 社)。

日付	2022 年 2 月 25 日	2022 年 3 月 4 日
会社名	Artezian	Semeinya Tradicii
対象商品	チーズ（カッテージ）	カッテージチーズ、
参加者	9（タスクチーム）+ 2（MOEC） +5（プロジェクト）	9（タスクチーム）+2（プロジェクト）
HACCP	未導入	ISO22000
検討会	2022 年 3 月 1 日	2022 年 3 月 10 日

工場監査試行の反省会における参加者からのコメント

- タスクチームのメンバーは、HACCP を導入している工場と未導入の工場の両方の工場視察試験を通じて、監査経験を蓄積することができた。
- タスクチームのメンバーは、検討会を通じて工場で見つかったいくつかの問題点を共有することで、監査基準のすり合わせができた。

工場監査試行実施から得られた主な課題と対応案

- ISO22000 認証を取得している工場ではほとんどが適合となった。一定水準以上の工場における監査ツールは再考の余地がある。
  ⇒　チェックシートの見直しを行い、現状に合った内容に改正する
- HACCP 管理状況、PRP の実施状況、記録帳票類など監査時に確認すべき事項が多い。⇒　監査経験が十分でない監査員には継続的に実地研修を行い、効率的に監査を行う能力を身に着ける必要がある。

b. 工場監査試行を実施した協力工場への HACCP 研修

上記 **a.**で訪問した HACCP 未導入工場に対して、HACCP 研修を行った。

・日程：2022 年 7 月 12 – 14 日
・出席者：Artezian から 3 名
・講師：DPSSES 8 名
・研修内容：食品衛生法令、食品危害とその管理、HACCP 7 原則
　演習：製品仕様書作成、製品製造フロー作成、危害分析表作成、HACCP 計画作成と発表

(2) DPSSES 検査所への問題解決のための指導内容と成果（化学分析分野）

化学分析専門家は、第１期から継続して C/P からの要望を基に、主要機器と既存の分析方法を確認し、信頼性が確保された分析結果を産出するために機器の安定化やメンテナンス、機器を有効に活用する技術、目的に合った試料の前処理など分析の妥当性確認を中心として技術移転を行った。技術移転に使用した主な機器と分析項目は以下の通りである。

主要機器	液体クロマトグラフ(LC, LC-MS/MS)	ガスクロマトグラフ(GC, GC, GC/MS)
機器メーカー	島津製作所	島津製作所
分析項目	抗生物質、アフラトキシン ビタミン、食品添加物	農薬

表 2-7　DPSSES における化学分析専門家による主な指導内容とその成果

実施時期	主な指導内容と技術移転分野	成果（指導の詳細及び改善事項）
2021.5-6	HPLC の解析方法 ＜機器の有効活用＞	新規導入機材（アジレントから島津）における分析結果の解析方法指導
	乳中のアフラトキシン M1 の分析 ＜妥当性確認＞	アフラトキシンの遠心分離による抽出調製により目詰まりがなくなり、回収率の向上と試験時間の短縮化。キルギスのバリデーションでは n-2,10 日分が必要だが、n=5, 5 日分のデータを勧めた。
	不確かさを算出するデータについて ＜不確かさ＞	ノルウェーの不確かさ算出ソフトのデータ異常の原因究明と解決
2021.10-11	HPLC によるアフラトキシン B1、アフラトキシン M1 の測定　＜妥当性確認＞	GOST で示されたアフラトキシンの HPLC の条件は過酷で機器を故障させる恐れがあるため、緩和な条件での測定法を指導
	HPLC によるテトラサイクリンの測定 ＜妥当性確認＞	GOST などの測定条件で測定できないので、移動相の組成や UV の波長などを検討し、測定ができるようになった。
	GC-ECD による 2,4-D の測定 ＜機器のメンテナンス＞	以前測定していたが検出できなくなった。GC 注入口のメンテナンスを指導し、2,4-D を検出できるようになった。
2022.5-6	HPLC による清涼飲料水中の安息香酸、アスパルテーム、カフェイン、サッカリンの測定 ＜機器の有効活用＞＜妥当性確認＞	HPLC の１液から２液送液のポンプ設定により、より安定した測定が可能となった。サンプル測定の直線性、感度ともに良好になることを確認した。
	HPLC によるはちみつ中の 5-ヒドロキシメチルフルフラールの測定 ＜機器の有効活用＞＜妥当性確認＞	はちみつのヒドロキシメチルフルフラール測定における HPLC の移動相のポンプ設定を改善し、直線性、感度ともに良好になることを確認した。
	HPLC の定期点検 ＜メンテナンス＞	HPLC の蛍光検出器の定期点検でアントラセンのピークが確認できない問題について、改善によりピーク確認、保持時間、面積の再現性が良好となった。

2022.9-10	HPLC によるビタミン B1、B2 の測定及び計算方法（新規対応）＜妥当性確認＞	HPLC によるビタミン B1, B2 の測定は初めてであるが、GOST で示されている測定条件を共に検討し、ビタミン含有量が適切に評価できるようになった。
	HPLC によるオクラトキシン A の測定 ＜妥当性確認＞	HPLC によるオクラトキシン A の GOST 記載の方法による回収率が約 20%と低いため、蒸発皿による濃縮からエバポレーターによる濃縮に変更した。
	HPLC によるはちみつ中のクロラムフェニコールの測定（新規対応）	HPLC によるはちみつ中のクロラムフェニコール分析を乳の分析方法で対応可能か検討した。抽出操作で濃縮ができなかったが、エバポレーターで対応が可能となった。エバポレーターの修理ができたことから他の濃縮作業も可能になり、その有効利用が期待される。
	HPLC によるはちみつ中の糖の分析（新規対応）＜妥当性確認＞	HPLC によりはちみつのグルコース、フルクトース、スクロースの分析が可能となった。キルギスで今まで CODEX のはちみつの糖の規格試験ができず、中国やドイツの機関に高額で分析依頼することがあったが、今後はキルギスで対応できるようになったことは大きな成果である。
	HPLC によるはちみつ中の 5-ヒドロキシメチルフルフラールの測定＜妥当性確認＞	オシュ CVDE からのはちみつサンプルを抽出して、分析が可能であることが確認された。
2023.5-6	LC-MS/MS の使用方法及び点検＜機器の有効活用＞	装置に使用するアルゴンガスの開栓、窒素発生装置の起動、機器の真空起動後の待機、マニュアルに記載されているメーカー推奨の使用方法の指導。移動相交換方法の指導。MS 条件の最適化。LC 条件の作成。
2023.8	LC-MS の使用方法及び点検＜機器の有効活用＞	真空ポンプの保守。抗生物質の抽出。LC-MS２種類のカラムで測定。オートサンプラーのリンス液交
	GC, GC-ECD の使用方法及び点検	GC-ECD 注入口周りの部品交換と洗浄。
2023.11	LC-MS/MS の使用方法及び分析指導 ＜機器の有効活用、分析の妥当性確認＞	ポンプ、オートサンプラーのパージ。 はちみつ抽出。コンタミの原因究明。 LC-MS 解析指導、HPLC 自動停止の方法指導
	GC-ECD, GC-MS 分析指導＜分析の妥当性確認＞	ハロゲン化合物、検量線作成指導

2-4-4　成果４に係る活動（経済省度量衡センター試験認証センター食品検査所(CSM)）

成果４：乳・乳製品における品質の適合性評価システムの開発

(1) CSM 検査所への問題解決のための指導内容と成果（化学分析分野）

1) ラボの検査能力と信頼性の開発

化学分析専門家は、第１期から継続して C/P からの要望を基に、主要機器と既存の分析方法を確認し、信頼性が確保された分析結果を産出するために機器の安定化やメンテナンス、機器を有効に活用する技術、目的に合った試料の前処理など分析の妥当性確認を中心として技術移転を行った。技術移転に使用した主な機器と分析項目は以下の通りである。

主要機器	液体クロマトグラフ(LC, LC-MS/MS)	ガスクロマトグラフ(GC, GC, GC/MS)
機器メーカー	サーモサイエンティフィック	サーモサイエンティフィック
分析項目	抗生物質、アフラトキシン	農薬

表 2-8　CSM における化学分析専門家による主な指導内容とその成果

実施時期	主な指導内容と技術移転分野	成果（指導の詳細及び改善事項）
2021.5-6	GC の使用方法＜機器の有効活用＞	GC のガス発生装置の起動及びガス安定供給後の GC 起動確認

	飲料水中の塩素系農薬の分析 ＜機器の有効活用＞	CG-ECD の測定条件設定。GC と PC の通信不良のため測定ができず、業者の確認が必要とするレターを作成した。
2021.10-11	放射線測定装置の使用方法（新規対応） ＜妥当性確認＞	放射線測定装置の点検と標準線源により装置の妥当性確認を指導した。 使用時の標準線源のキャリブレーションやバックグラウンド、空容器、試料の測定を確認する指導をした。
	放射能サンプル測定に関する注意点 ＜機器の有効活用＞	試料を隙間なく詰めること、検出器の汚染防止のためラップでカバーすることなどを注意。乳や粉乳の測定は 10 分程度で適切な結果が得られた。
2022.5-6	ソックスレー装置の使用方法及び点検 ＜機器の有効活用＞	装置の使用時に冷却水の流速を確認し、抽出用ビーカーの取り扱いは手指の脂の影響防止のため手袋をするなどの指導。
	サンプル測定に関する注意点 ＜妥当性確認＞	サンプルの詰め方、円筒ろ紙の扱い時の手袋使用などを SOP に記入するように指導
2023.5-6	LC-MS/MS の使用方法及び点検 ＜機器の有効活用＞	装置に使用するアルゴンガスの開栓、窒素発生装置の起動及びドレイン、機器の真空起動後の待機、マニュアルに記載されているメーカー推奨の使用方法の指導。移動相交換方法の指導。MS 条件の最適化。LC 条件の作成。

2-5 その他の活動

(1) 本邦研修

C/P に対して 2023 年 2 月と 10 月に本邦研修を 2 回実施した。本邦研修は、日本における食品検査や食品衛生モニタリング制度、ラボや監査技術者の取組について、行政機関や民間企業などを訪問して、キルギスの監督機関が今後食品検査体制や技術者育成改善の参考とすることを目的としている。

日本の食品安全行政は、市場での食品安全確保のために食品製造現場での衛生監視や食品検査、モニタリングなどが密接に連携していることから、本邦研修の研修員が日本の食品検査体制と工場や流通における監査制度、またそれらの人材育成の取組を理解することは、キルギス行政官が今後自国の人材育成システムを検討するために役立つと思われる。

各本邦研修での訪問先は以下の通りである。

表 2-9 第 1 回本邦研修訪問先

No.	訪問先	訪問目的と視察内容
1	東京都福祉保健局食品監視課	東京都の食品監視の取組ヒアリング
2	東京都市場衛生検査所	市場における流通食品の安全確保のためのラボ及び監視指導視察
3	JAS 協会	日本の農産物規格と有機認証制度承継
4	横浜検疫検査センター	日本における輸入食品検査の制度紹介と食品検査ラボ視察
5	横浜市衛生研究所	地方自治体による食品検査の取組み
6	農林水産消費安全技術センター	食品表示と検査ラボの活動
7	OMIC	民間検査機関の業務紹介
8	JICA 経済開発部	JICA 表敬
9	新日本検定協会（横浜検査所）	日本の民間検査所見学、抗生物質の分析研修
10	食品衛生アドバイザー	保健所の監視指導と衛生監視員育成
11	食品需給研究センター	食品トレーサビリティ
12	明治乳業守谷工場	乳製品製造工場の見学

13	日本 HACCP トレーニングセンター	HACCP トレーナー研修
14	日本生産者 GAP 協会	生産段階での GAP, GlobalGAP

表 2-10 第 2 回本邦研修訪問先

No.	訪問先	訪問目的と視察内容
1	東京都保健医療局食品監視課	東京都の食品監視の取組ヒアリング
2	東京都健康安全研究センター	食品検査ラボの活動内容と人材育成、HACCP 広域監視
3	横浜市衛生研究所	地方自治体による食品検査の取組み
4	雪印メグミルク工場（海老名工場）	乳製品製造工場の見学
5	農林水産消費安全技術センター	食品表示と検査ラボの活動
6	JAS 協会	日本の農産物規格と有機認証制度承継
7	OMIC	民間検査機関の業務紹介
8	新日本検定協会（横浜検査所）	LC-MS/MS の維持管理及び化学分析研修
9	食品衛生アドバイザー	保健所の監視指導と衛生監視員育成
10	食品需給研究センター	食品トレーサビリティ
11	湯川技術士事務所	食品安全マネジメントシステム認証
12	トモエ乳業	乳製品製造工場の見学
13	日本 HACCP トレーニングセンター	HACCP トレーナー研修
14	日本生産者 GAP 協会	生産段階での GAP, GlobalGAP

各本邦研修に参加した研修員はそれぞれ以下の通り。

表 2-11 本邦研修の研修員リスト

	第 1 回研修（2023 年 2 月）	第 2 回研修　（2023 年 10 月）
ラボグループ		
経済商務省 度量衡センター	Ms. Aigul Aksupova	Ms. Elmira Tursunova Ms. Meerim Esenalieva Mr. Anvar Abdraimov
保健省　疾病予防衛生疫学監督部	Ms. Aigul Dzhumakanova Ms. Gulkair Jolboldieva	
農業省　獣医衛生検査院 （獣医診断検査センター）	Mr. Ermek Kurmankulov Ms. Elena Turenko	Mr. Rasul Toimbetov Ms. Begimay Ibraimakunova
HACCP グループ		
経済商務省　技術規則部	Mr. Bakytbek Shabdanov Ms. Galia Abdymomunova	
保健省　疾病予防衛生疫学監督部	Ms. Nazgul Abamuslimova	Mr. Azamat Imakeev Ms. Aida Alimbekova Ms. Gulnara Kozhogulova
農業省　獣医衛生検査院	Ms. Gulmairam Iskembaeva	Ms. Asel Abdyldaeva
研修員	9 名	9 名

(2) 広報活動

プロジェクト広報誌「ふらくむ通信」は、事業の内容と進捗について正確に理解して頂けるように、プロジェクトの活動内容をできるだけ具体的に記載してきた。それ以外にも、キルギス全体のことや首都ビシュケクの自然環境や人々の暮らしなどにも触れながら、その時のトピックスを中心に興味を持って読んでいただけることを願って作成した。

第１号(2019 年８月)から、半年毎に発行し、途中 2020 年には新型コロナの影響でしばらく中断したが、2021 年８月（第３号）から再開し、その後最終号の 2024 年１月（第９号）まで JICA のホームページ広報欄にアップして頂いた。

(3) 運営指導調査

運営指導調査は、2022 年 6 月に JICA 本部からの調査団が派遣され、プロジェクト活動や成果などについて C/P との協議を行い、帰国前にキルギス事務所長への調査結果報告が行われた。

調査日程	2022 年 6 月 24 日～7 月 2 日
調査団	JICA 経済開発部農業 2T 鈴木篤志（協力企画）
調査内容	・プロジェクト活動の進捗及び修了までの活動計画についての協議 ・PDM における成果達成に向けた課題の取組みについての協議 ・C/P からの要望事項についての意見交換と今後の対応方針についての合意
調査結果報告のポイント	工場監査における DPSSES と VS の役割分担の重複に関連して日本の食品安全政策の専門家派遣の要望があった。終了時評価への対応もあり、調査団から PDM 指標の見直しについて提言があった。

(4) 終了時評価

プロジェクト終了にあたり、2023 年 5 月に JICA 本部から終了時評価調査団が以下の通り派遣され、現地調査を実施しその結果が JCC で報告された。

調査日程	2023 年 5 月 12 日～5 月 29 日
調査団	JICA 経済開発部 桐野有美（国際協力専門員）他
調査内容	C/P へのインタビュー（活動内容や課題など）、検査所視察、JCC での調査結果報告
調査団からの提言	HACCP 監査チェックシートの標準化と対象工場の段階に応じたコンサルテーション 日本の関連ガイドラインを参考にした FSMS ガイドラインのドラフト作成 適切な予算配分による研修プログラムの実施計画

終了時評価調査結果に基づく成果毎の指標は、以下のように報告された。

表 2-12 終了時評価調査結果（成果指標と達成度）

No.	指標	達成度	備考
成果１：実施機関がプロジェクト活動の詳細と実施体制について協議・合意する。			
1.1	以下の項目について C/P と合意する。		
1)	プロジェクト活動で全ての C/P が合意する	90	月例の WG 会議が開催されている
2)	部門毎の 3 カ年人材育成計画と研修プログラムが作成され所属長に承認、実施される。	0	プロジェクト後半に計画作成が準備される。
成果 2. 農業省 獣医衛生検査院とその地方検査所による生乳と生産工程における安全性のための適合性評価システムが開発される。			
2.1	ラボの有能な技術者として満足できるレベルに 50%以上が達する	100	達成済だが研修は継続
2.2	ISO/IEC17025 の最新版に更新、改善される	100	達成されたが更なる改善が必要
2.3	HACCP 監査研修プログラムが開発され、工場での研修などで改訂され、承認される。	100	達成済
2.4	工場監査試行が計画・実施される	100	達成済
2.5	TOT プログラムが計画・実施される	100	継続中

成果 3.　保健省　DPSSES とその地方検査所による乳製品と製造工程における安全性のための適合性評価システムが開発される			
3.1	ラボの有能な技術者として満足できるレベルに 60%以上が達する	100	達成済だが研修は継続
3.2	ISO/IEC17025 の最新版に更新、改善される	100	達成されたが更なる改善が必要
3.3	HACCP 監査研修プログラムが開発され、工場での研修などで改訂され、承認される。	90	ほぼ達成済、承認待ち
3.4	工場監査試行が計画・実施される	100	達成済
3.5	TOT プログラムが計画・実施される	100	継続中
成果 4.　経済商務省 CSM とその地方検査所による乳製品品質のための適合性評価システムが開発される			
4.1	ラボの有能な技術者として満足できるレベルに 70%以上が達する	60	改善はされているが、研修は継続される
4.2	ISO/IEC17025 の最新版に更新、改善される	100	達成済

DAC 評価 6 基準	評価の視点	総合評価結果
妥当性	受益者のニーズ、政策への対応度合	High
整合性	日本の支援政策との整合	Moderate
有効性	プロジェクト目標の達成見込み	High
インパクト	プロジェクトの効果の度合	High
効率性	投入と成果の関係	High
持続性	継続性（政策面、制度面、財政面）	Moderate

評価結果の結論としては、プロジェクト期間中予定された活動はほぼ実施され、プロジェクト終了時には成果とプロジェクト目標の全ての指標は達成される見込みであるとされた。

(5) 便宜供与

プロジェクトの活動を開始した 2019 年４月中はビシュケク市内のホテルの会議室を仮オフィスとして利用し業務を行っていたが、５月のキックオフミーティング実施前の 5 月上旬に、経済商務省内の一室にオフィスを移した。それ以降、2023 年 12 月の現地業務の終了時まで無償で部屋を利用することができ、プロジェクト運営の拠点として資料作成や専門家の活動スペース、チーム内の打合せのための会議室として活用した。

2-6 他ドナーによる酪農セクターへの食品安全に関係するプロジェクト

エンドライン調査結果から 2020 年から 2023 年にかけて酪農セクターへの食品安全に関係する他ドナーのプロジェクトは、以下の通り。

表 2-13 酪農セクターにおける他ドナープロジェクト（食品安全関連）

プロジェクト名	プロジェクトの目的	実施状況	実施期間
FAO 地域プロジェクト「中央アジア諸国とトルコにおける農薬ライフサイクル管理と POPs 農薬廃絶」	POPs と汚染サイトを削減し、環境的に健全な農薬管理の能力を強化すること	利害関係者からなるプロジェクト実施のための運営委員会と作業部会が設立され、アクションプランが策定された。	2019 年から 2023 年までの 5 年間
キルギス共和国センター	国内消費と近隣諸国へ	人工授精機器の購入	2021 年から 2023

KOPIA「キルギスにおける家畜改良と生産性向上のためのプログラム開発」	の輸出を目的とした牛肉･乳製品生産のための家畜改良プロジェクトの能力構築と資金調達、生産性の高い生産施設開発のための二国間 協力	チュイ州とイシク・クル州における農場選定と人工授精モニタリング	年までの 3 年間
国際開発協会（世界銀行）「酪農セクター生産性向上統合プロジェクト(第 2 フェーズ)」	キルギス酪農生産の増加と持続可能な乳製品輸出を確立により、酪農家の所得増加やバリューチェーン全体で新たな雇用を創出する	追加融資	2022 年から
USAIS 競争的企業プロジェクト	中小企業の競争力向上と新市場へのアクセス・投資を誘致することで、キルギスの雇用創出と家計所得を増加を支援する	2018 年以降、約 9,000 人の常用雇用を含む 25,959 人の雇用が創出され、酪農企業では設備の購入やスタッフの訓練が行われた	2018 年から 2023 年まで
ドイツ物理技術研究所(PTB)プロジェクト 「キルギスにおける質の高いインフラサービスの利用促進(第 2 期)」	民間および公的企業･機関への質の高いインフラのサービスを利用促進	経済商務省の下にプロジェクト監督委員会が設立され、21 の食品検査機関が加盟するラボラトリー・クラブが設立された。国際的な検査法導入のためのロードマップが作成され、標準物質の調達や国際的な検査機関間比較試験の支援や研修が提供された。	2022 年 4 月から 2025 年 3 月まで

(出典：エンドライン調査報告書別添資料：国際ドナーによる酪農セクターへの食品安全関連プロジェクト)

第３章　プロジェクトの達成度

第 3 章　プロジェクトの達成度

3-1　目標の達成度

3-1-1　成果１：実施機関が案件の詳細活動/実施体制について協議

関係するカウンターパート(C/P)機関によって協議事項の合意がなされる。

指標 1. カウンターパート(C/P)間で以下の項目が合意される - プロジェクト活動において全ての C/P が連携する　（C/P 連携確認済） - 部門毎の 3 カ年人材開発育成計画と研修プログラムが作成され、関係機関の長に承認され、プロジェクト終了後に実施される。　（人材育成計画確認済）

1) マネジメント面でのプロジェクト活動における C/P の連携

「2-2 プロジェクト全体の管理運営活動」でも述べたように、PM から構成される WG がプロジェクトの管理運営を担う。経済商務省が WG 定例会議（原則月 1 回）を開催し、PM 同士が積極的な意見交換などにより問題解決やプロジェクト活動の調整などを行った。特に第２期においては、経済商務省が各機関にプロジェクト全体としての活動や成果の観点からの議論を促すことで、C/P 間の連携が強化されていたと思われる。

表 3-1　ワーキンググループ（WG）会議（第 2 期）での協議内容とその成果

期間	実績と協議事項	C/P の連携としての成果
2022 年 2 月～3 月	第２期のワーク・プランの説明と第４回 JCC での C/P による発表の協議	経済商務省が、今後の JICA への要望事項の取りまとめを行った。
2022 年 6 月～10 月	運営指導調査及び本邦研修についての説明 PDM 指標改訂についての協議 第５回 JCC 準備説明	運営指導調査で指摘があった PDM 指標改訂について 3 回にわたって WG 会議で協議を行い、共通認識を深めた。
2022 年 11 月～2 月	本邦研修でのアクションプラン作成	第１回本邦研修参加者のほとんどが PM であり、各機関からのアクションプランを共有した。
2023 年 3 月～5 月	終了時評価の説明	2023 年 2 月に実施した本邦研修の成果発表と終了時評価結果の情報共有
2023 年 8 月～9 月	エンドライン調査、地方研修ニーズ調査 第２回本邦研修説明	地方における研修ニーズ調査結果及び 2023 年 10 月に実施した第２回本邦研修結果の共有
2023 年 11 月～12 月	第７回 JCC 会議実施準備説明 フォローアップ活動協議	プロジェクト実施後のフォローアップ活動についての意見交換と今後の対応への共通理解

2) 技術面でのプロジェクト活動における C/P の連携

第１期の報告書では、検査所における C/P の連携について、試験所間比較試験や標準作業手順書(SOP)の作成促進の例を取り上げたが、本報告書では HACCP 監査グループの合同会議について紹介する。キルギスの食品工場や農家・集乳場などを監査する機関は、保健省疾病予防衛生監督部(DPSSES)と農業省獣医衛生検査院(VS)であり、それぞれが経済商務省の管理の下で監査を実施しており、プロジェクトとしても HACCP 監査の技術移転は今まで個別に実施してきた。今まで、活動の進捗状況や監査における課題等について情報共有する機会がなかったことから、工場監査を

実施するタスクチームメンバー相互の意見交換と情報共有のための HACCP 合同会議を開催した。

合同会議のテーマ：

・HACCP 監査員に求めるものについてのプレゼンテーション（経済商務省 PM ガリア氏）

・DPSSES と VS からのプロジェクト活動進捗状況説明(DPSSES: Ms. Iren, VS: Ms. Mira)

・プロジェクトへの提案及び質疑応答

合同会議で示された提案及び質疑応答、プロジェクトからのコメントについて以下に示す。

表 3-2　HACCP 監査研修での C/P 連携の例

提案・質疑応答	プロジェクトからのコメント
現在キルギスには監査員として満たすべき要件を定めた規制などが存在しないため、果たすべき役割が明確化されておらず、監査員のレベルもばらつきがある。	HACCP 監査員の力量などの要求事項について、今後作成する衛生管理テキストに加えて欲しい。
日本の監査員の要件はどのようになっているか？	日本では民間監査員がキルギスと同様 PRP、HACCP7 原則 12 手順、HACCP 内部検証などの研修を受け、必要な技能を習得する仕組みがある。 本邦研修において工場監査を行う機関を訪問する予定なので、参加者は仕組みを確認して、帰国後にメンバーに共有してほしい。
原料乳に植物油などの混雑物を入れ、嵩増しするなどの偽装が行われることがあり、それらを防ぐこと、検査によって不正な原料を検出することが課題。	本邦研修で偽装表示を検査する検査所があるので、それを参考にして欲しい。
HACCP 研修の中では原則 6 の検証が最も分かりづらいとの意見が多かった。	本邦研修で HACCP トレーナー研修を予定しており、特に検証について説明をするように依頼する。

3) 3 カ年人材開発育成計画

当初経済商務省が５カ年計画を C/P 全体として取りまとめる計画としたが、各機関で実施内容が異なることから、一つの研修計画ではなく、対象機関毎に策定し各機関の長に承認された 3 カ年の中期人材開発育成計画に変更した（PDM の指標も併せて変更した)。具体的な研修計画を以下に示すが、全体の傾向として、本プロジェクトの成果に基づいて、検査所グループでは、輸出相手先や EAEU 技術規則による更なる要求事項の拡大に対応するための試験項目や分析方法の強化が中心であり、HACCP 監査グループでは、ビシュケクを中心に実施してきた監査員能力強化研修の範囲を全国に普及するための地方研修の強化が計画されていることが分かる（人材開発育成計画の具体的内容は「第５章プロジェクト後の活動」で後述する)。

表 3-3 3 カ年人材開発育成計画（検査所グループ）（要約）

	CVDE （農業省獣医衛生検査院）	DPSSES（保健省 疾病予防衛生疫学監督部）	CSM（経済商務省 度量衡センター）
タイトル	分析機器研修（HPLC, LC-MS/MS,GC,GC/MS,AAS,ELISA）	分析機器研修（HPLC,LC-MS/MS, GC, GC-MS,AAS,ELISA,ICP-MS）	試験所研修（外部、内部）
主な目的	ラボ技術者の専門能力向上 動物由来の食品原料の安全性検査の範	試験項目拡大に伴う分析方法の標準化のための能力強	分析方法導入及び妥当性確認の実践的研修

	囲を拡大する新たな分析方法の導入	化	
主な活動	- 国内市場に流通する動物由来の食品原料および EAEU 諸国に輸出する食品原料の安全性項目を分析できるようにして、キルギス企業家のニーズを満たす。 - EAEU 加盟国の要求事項に従った動物由来食品原料の安全性項目の分析	- ラボ規格 ISO/IEC 17025 に準拠した検査所の品質管理システムの改善。 - ラボ専門家の研修 - 試験所間比較試験および技能試験への定期的参加	- 乳製品中の抗生物質 LC-MS による測定 - 乳製品 GMO の PCR 検査 - GC による乳製品の脂肪酸組成分析方法 - EAEU 技術規則の要求事項への適合性評価実施

表 3-4　3 カ年人材開発育成計画（HACCP 監査グループ）（要約）

	DPSSES （保健省）	VS （農業省）
タイトル	乳・乳製品の製造・加工に従事する製造業者に対する HACCP システム導入監査のための DPSSES 地方監査員に対する研修計画	農場、集乳場、食品企業における HACCP 監査のための地方獣医監査員の獣医学・衛生学的要件に関する研修計画 2024-2026
主な目的	監査員やトレーナーとしての研修を通じて HACCP システムの知識を深める。 食品産業における HACCP システム導入のトレーナーとして研修能力を強化し、研修実施の経験を積む。	地方における HACCP の実施を促進するため、地方獣医監査員の能力を向上させる。
主な活動	トレーニングモジュールとプログラム 〈基礎レベル〉 EAEU 技術規則 前提条件プログラム（PRP） HACCP7 原則と HACCP プラン 〈上級レベル〉 食品微生物学 HACCP 監査 食品安全マネジメントシステム 食品サンプリング 乳製品の HACCP	1. HACCP 監査に関する理論的なセミナーとトレーニング 2. 農場、集乳場、食品企業における HACCP 監査の実地研修セミナー 3. 農場、集乳場、食品企業の HACCP 監査ガイド、チェックリストの活用 4. 獣医学・衛生学的要求事項に従って、農場、集乳場、食品企業の HACCP 監査のための報告書作成.

3-1-2　成果２：生乳における安全性の適合性評価システムの開発
（獣医衛生検査院(VS)及び獣医診断検査センター(CVDE)及び地方事務所）

指標 1. 研修を受けた 50%以上が有能なラボ技術者としての十分なレベルを獲得する。（達成済）

検査所技術者の能力は、「第２章プロジェクトの活動　2-3-1 検査技術の能力向上　2)検査所技術者の技術研修・支援方針」で述べたように、プロジェクトが目指すレベルとしての「妥当性確認」が習得されたかどうかを技術者スキルマップ[1]に基づいて、専門家の判断により有能と認められた技術者数は下表の通り。

[1] 2-3-1 検査技術の能力向上 b.プロジェクトが目標とするラボ技術者のレベルを参照のこと

表 3-5　研修の結果として専門家が有能と認めた技術者数(CVDE)

現在の検査所技術者数		機器別の主な指導項目と専門家が有能と認めた技術者数		他のスタッフ	検査所技術者の経験年数
GC	3	GC: 農薬の測定条件、解析方法	2	PM（1）	10 年以上（3）
LC	2	LC: アフラトキシン測定など	2	他（4）	5 年以上（2）
AA他	2	AA: 重金属	1		3～5 年（1）
Micro	2	Micro: 微生物検査の妥当性確認	2		1～3年（3）
(合計)	9	(合　計)	7		

CVDEにおける現在の技術者９名中７名が妥当性確認技術を習得し有能なレベルに達した。
（目標50%に対して77.8%の技術者が有能なレベルに達したといえる）

指標 2. ラボのマネジメント（質管理）が ISO/IEC17025:2017（最新版）を満たすように改善される
（達成済）

CVDE ラボは、今までも ISO/IEC17025:2005 年版(旧版)を所有しており、キルギス認定センター(KCA)から ISO/IEC17025(2017 版)(新版)の認定を 2020 年 3 月に取得している。ISO17025 に基づいてラボマネジメントを実施しており、指標は達成されていると言えるが常に改善が必要である。

検査所のマネジメント（品質管理）状況について、内部精度管理の専門家が重金属分析における試験法について監査を行った。本検査所は機器や試薬の管理、試験法、試験結果の管理などラボマネジメントの観点からほぼ適切に実施されていると言えるが、今後対応すべき課題などについて以下に示す(現在重金属分析のための原子吸光分光光度計は修理が必要で試験停止中であり、海外の代理店からの修理を待っている)。

表 3-6 CVDE ラボマネジメント監査結果

監査対象の試験法及び結果	●重金属 (Cd,Pb,As,Hg)、マイクロウェーブ+AAS 試験法 標準品、試薬管理：適切 器具、機器の管理：適切 純水装置の管理、水質：適切 試験結果の管理、QC：適切 外部精度管理試験結果：良好 問題点・課題 原子吸光分光光度計及びマイクロウェーブ：メーカーレベルの修理/調整が必要で現在試験停止中。現在の対応業者では技術的にそこまでできない。 試験法妥当性確認：済み 不確かさ：済み
指導、情報提供、トレーニング等	AAS、マイクロウェーブの状況の詳細を確認。
SOP 作成	現在の試験法/SOP からは今のところ変更の必要性はない。
今後の課題	重要な機器である AAS、マイクロウェーブは今以上の技術のある業者により修理/調整を行ってもらう必要がある。高度な修理の必要が出た時の対応方法を考えておかなければならない。

指標 3. HACCP 監査研修プログラムが開発され、工場での研修などで改訂される。そして、農業省 VS 所長により承認される。　（達成済）

1) HACCP 監査研修プログラムの開発と研修の実施

監査員を基礎、シニア、トレーナーの 3 段階のレベルに分け、それらに応じた下表の研修プログラムを開発し、専門家が必要な研修資料と共に研修を実施した。

表 3-7 HACCP 監査研修プログラム

レベル	研修プログラム	研修内容
基礎レベル	一般衛生管理（PRP）	衛生管理、衛生教育、害虫駆除など
	食品安全規則	EAEU 技術規則
	監査員への要求事項	監査とサンプリング
シニアレベル	HACCP 基礎	HACCP 7 原則
トレーナーレベル	工場への HACCP 導入	HACCP プラン
		HACCP 原則に基づく工場監査
	サンプリング	サンプリング技術の改善
	国際的食品安全マネジメント	ISO22000, FSSC22000 等

2) 獣医衛生監査員向け食品衛生研修テキストの開発

プロジェクトのカウンターパートは、HACCP 研修の成果を活用し、「農業省獣医衛生監査員のための獣医学的・衛生学的要求における食品衛生マニュアル」を作成した。今後、地方監査員や農場・乳製品加工工場の研修資料として活用されることが期待される。

表 3-8　獣医衛生監査員向け食品衛生研修テキストの主な内容

タイトル	農業省獣医衛生監査員のための獣医衛生要求における食品衛生マニュアル
関連規制	国家規制：動物用医薬品、獣医関連書類の発行手続き、食品工場の HACCP チェックリスト、食品工場の HACCP 記録書類 EAEU 獣医衛生要求規則：技術規則（食品安全、乳・乳製品の安全性、包装の安全性、食品表示）
一般衛生管理	一般衛生管理：トレーサビリティと原材料管理、設備と機材の衛生管理、従業員の衛生管理、衛生研修、害虫管理、苦情処理と製品回収、廃棄物管理
HACCP	HACCP 7 原則と 12 手順：HACCP 7 原則の説明 HACCP 監査：監査における監査員の要求事項、監査のための要求事項、工場における監査手順、食品施設の HACCP、不適合への是正措置
農家	集乳場における HACCP（EEU Decision No. 94）

指標 4. 食品工場監査の試行が計画・実施される。　（達成済）

「第２章プロジェクトの活動 2-4-3 成果２に係る活動 (1)獣医衛生検査院の監査員向け HACCP トレーニング」でも乳製品加工工場への監査試行について、第１回の実施とその対象企業への HACCP 研修の活動実績について述べたが、ここでは成果として同じ工場への第２回目の食品工場

監査試行について以下に示す。前述の試行は、監査員研修としての位置づけであったが、監査は対象とする工場の衛生管理についての評価や改善を目的としたものであり、第１回の指摘事項について HACCP 導入に向けたその後の工場としての取組みを確認したもので、工場の監査を積み重ねることで工場の衛生管理改善に向けたコンサルテーションを実施することで、乳製品の品質や安全性確保に行政として貢献することになる。

食品工場監査試行の実施（第２回）

（工場監査試行第１回を実施した HACCP 未導入工場（2022 年 2 月 24 日)に対して第２回の HACCP 監査試行を行った）

日程：2022 年 11 月 25 日

工場：Sutash

製品：チーズ

監査試行結果：

- 前回指摘した改善リストに関して、大きな費用を必要としない記録帳票類を中心に改善が見られた。
- 木製備品をプラスチック製や金属製など段階的に切り替えており、天井の結露なども以前より減っていた。
- 研修を踏まえて CCP を再検討し、５個あった CCP を原料乳受入（抗生物質残留）と低温殺菌に減らした。

指標 5. 監査員の TOT プログラムが計画・実施される。　（達成済）

タスクチームメンバーがプロジェクトと共に開発した衛生管理点検チェックシートを基に農場及び集乳場の監査を行い、併せて TOT として地方監査員への監査研修も行った。また、酪農家及び集乳業者に衛生管理マニュアルの一部を使用して、生乳の衛生管理のための HACCP についても TOT としてタスクチームメンバーが講義を行った。

実施日時	2023 年 9 月 14 日～15 日 09:00-17:00
実施場所	イシククル州ジェティオグス地区獣医衛生地方検査院事務所、酪農場、集乳場
研修対象者	ジェティオグス地区の獣医衛生検査院地方監査員及び農家及び集乳場業者
研修内容	地方監査員向けの監査研修（酪農施設及び集乳段階における衛生管理など） 酪農家及び集乳業者への HACCP 研修
研修実施者	VS: タスクチームメンバー（２名） プロジェクト：２名

3-1-3　成果３：乳・乳製品における安全性の適合性評価システムの開発

（保健省疾病予防衛生疫学監督部(DPSSES)及び地方事務所）

指標 1. 研修を受けた 60%以上が有能なラボ技術者としての十分なレベルを獲得する。（達成済）

検査所技術者の能力は、「第２章プロジェクトの活動 2-3-1 検査技術の能力向上 2) 検査所技術者の技術研修・支援方針」で述べたように、プロジェクトが目指すレベルとしての「妥当性確認」技術が習得されたかどうかをラボ技術者スキルマップ[2]に基づいて、専門家の判断により有能と認められた技術者数は下表の通り。

表 3-9　研修の結果として専門家が有能と認めた技術者数（DPSSES）

現在の検査所技術者数		機器別の主な指導項目と専門家が有能と認めた技術者数		他のスタッフ	検査所技術者の経験年数
GC	3	GC: 農薬の測定条件、解析方法	2	PM（1）	10 年以上（5）
LC	3	LC: アフラトキシン測定など	3	他（1）	5 年以上（7）
AA他	3	AA: 重金属	2		3～5 年（2）
Micro	6	Micro: 微生物検査の妥当性確認	3		
（合計）	14	（合　計）	10		

DPSSESにおける現在の技術者14名中10名が妥当性確認技術を習得し十分なレベルに達した。（目標60%に対して71.4%の技術者が有能なレベルに達したといえる）

指標 2. ラボのマネジメント（質管理）が ISO/IEC17025:2017（最新版）を満たすように改善される（達成済）

DPSSES ラボは、今まで ISO17025:2005 年版(旧版)を所有しており、キルギス認定センター(KCA)から ISO/IEC17025:2017（新版）の認定を 2021 年 5 月に取得している。ISO17025 に基づいてラボマネジメントを実施しており、指標は達成されていると言えるが常に改善が要求される。

検査所のマネジメント（品質管理）状況について、内部精度管理の専門家が重金属分析における試験法について、監査を行った。本検査所は機器や試薬の管理、試験法、試験結果の管理などラボマネジメントの観点からほぼ適切に実施されていると言えるが、今後対応すべき課題などについて以下に示す

表 3-10 DPSSES ラボマネジメント監査結果

監査対象の試験法及び結果	●重金属（Cd,Pb,Zn）、マイクロウェーブ+AAS 試験法 標準品、試薬管理：適切 器具、機器の管理：適切 純水：測定には購入純水を使用 試験結果の管理、QC：適切 外部精度管理試験：予定中 問題点・課題 -SOP：作成中 -妥当性確認試験：未実施 -AAS の正規の点検：なし（冷却水圧が不足ぎみ）
指導、情報提供、トレーニング等	乾式灰化法改善確認試験、AAS 操作・メンテナンス確認・Cd 不検出原因調べ
SOP 作成	複数の GOST 規格にまたがる乾式灰化法、マイクロウェーブ前処理法、AAS 測定法を一

[2] 2-3-1 検査技術の能力向上 b.プロジェクトが目標とするラボ技術者のレベルを参照のこと

	つにまとめた形の SOP を作成する予定。
今後の課題	マイクロウェーブ前処理での AAS 試験法については確立して妥当性確認試験を実施し、それと従来の AAS 測定分をまとめて SOP 化しなければならない。また、AAS は重大な不調は今のところないが正規業者による点検は今後必要である。

指標 3.　HACCP 監査研修プログラムが開発され、工場での研修などで改訂される。そして、保健省 DPSSES 所長により承認される。　（達成済）

食品工場監査員のトレーニングモジュールシステムは、今までプロジェクトが指導してきたプログラムを基に、タスクチームメンバーが専門家と協力して開発した。今後実施する地方監査員研修で HACCP の監査能力強化やトレーナーの育成を目的としており、併せて監査員用の食品衛生監査テキストの作成を行う。

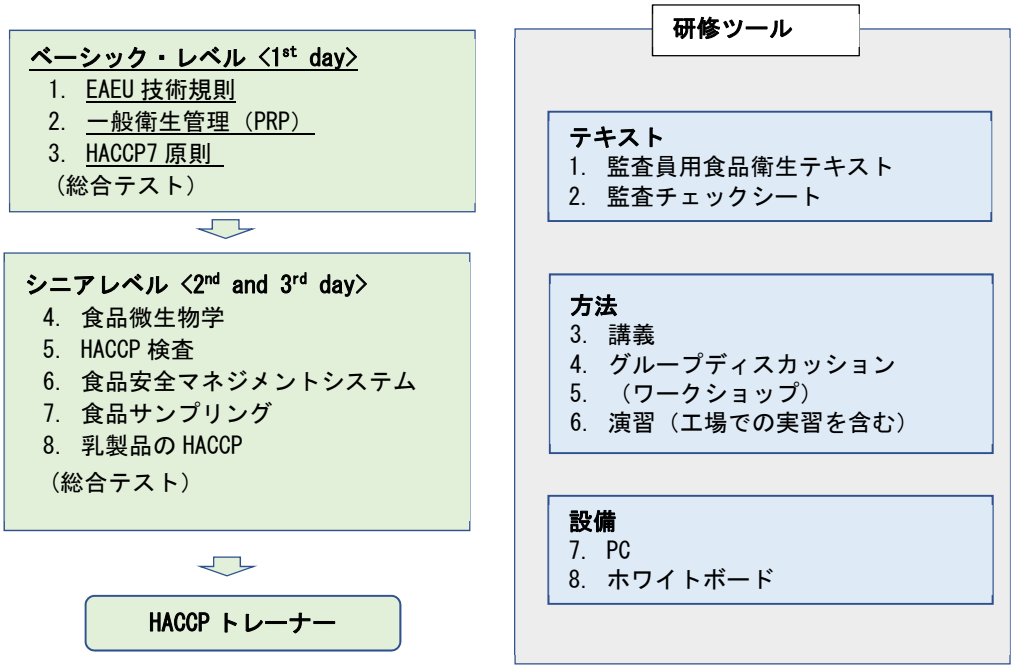


図 3-1　HACCP 監査トレーニングモジュールシステム

表 3-11　疾病予防衛生疫学監督部監査員向け食品衛生研修テキストの主な内容

タイトル	HACCP 原則と衛生要求のための乳・乳製品の衛生管理と監査ガイドライン
関連規制	食品安全分野の規制：技術規則、関税同盟の技術規則要求における適合性評価の適用手順、EAEU の技術規則要求における国家監視のリスクベースアプローチの原則と方法
一般衛生管理	一般衛生管理：原材料管理、施設・機材の衛生管理、工場の環境・施設への要求事項、衛生管理、従業員の衛生管理、衛生教育、害虫管理、苦情処理と回収プログラム、廃棄物管理
HACCP	HACCP 原則：12 手順と HACCP7 原則 HACCP 監査：ISO9001 に基づく監査員への要求、工場監査の国家規制要求事項、HACCP 監査

付属資料	付録：チェックシート様式、定期健康診断、従業員の疾病検査記録様式、HACCP 計画（低温殺菌牛乳の例）

指標 4. 食品工場監査の試行が計画・実施される。　（達成済）

「第２章プロジェクトの活動 2-4-4 成果３に係る活動 (1)食品衛生監査員向け HACCP トレーニング」でも乳製品加工工場への監査試行について、第１回の実施とその対象企業への HACCP 研修の活動実績について述べたが、ここでは成果としての食品工場監査試行について以下に示す。前述の試行は、監査員研修としての位置づけであったが、監査は対象とする工場の衛生管理についての評価や改善を目的としたものであり、第１回の指摘事項について HACCP 導入に向けたその後の工場としての取組みを確認したもので、工場の監査を積み重ねることで工場の衛生管理改善に向けたコンサルテーションを実施することで、乳製品の品質や安全性確保に行政として貢献することになる。

食品工場監査試行の実施（2）

（工場監査試行第１回を実施した HACCP 未導入工場（2022 年 2 月 25 日)に対して第２回の HACCP 監査試行を行った）

日程：2022 年 11 月 14 日

工場：Artezian

製品：チーズ

監査試行結果：

- 当日急な停電により工場で製造がおこなわれていず、実際のオペレーションの確認ができなかった。
- 以前指摘した改善点のうち、換気システムの導入や床の修復など予算を必要とする内容は段階的に今後改善をするとのことだったが、製品の低温保管や記録類など改善が確認された項目もあった。

指標 5. 監査員の TOT プログラムが計画・実施される　（達成済）

タスクチームメンバーがそれぞれ研修内容を分担して TOT として、地方監査員に対する HACCP 研修を行った。

1） 地方監査員に対する HACCP 研修の実施（ベーシックレベル研修）

日　程	2022 年 7 月 27-28 日（２日間） 9:30 - 14:00
会　場	DPSSES 会議室
対　象	チュイ州地方監査員（20 名）
研修内容	キルギス及び EAEU の食品衛生に関する法令、前提条件プログラム、HACCP12 手順、食品危害とその管理、HACCP7 原則 演習：製品仕様書作成、製品製造フロー作成、危害分析表作成、HACCP 計画作成及び発表

2) 地方監査員に対する HACCP 研修の実施（シニアレベル研修）

日　程	2022 年 11 月 10-11 日（２日間）　10:00 - 14:00
会　場	DPSSES 会議室
対　象	チュイ州地方監査員（20 名） ベーシックレベル研修に参加した地方監査員 20 名の中から、監査経験が豊富で理解度テストが一定水準以上であった５名を選定
研修内容	乳製品 HACCP、食品工場のレイアウトとゾーニング、トレーサビリティシステム、HACCP 監査、食品安全マネジメントシステム（ISO22000 等）、食品サンプリング、食品微生物

3-1-4　成果４：乳・乳製品における品質の適合性評価システムの開発
（経済商務省度量衡センター食品検査所(CSM)及び地方事務所）

指標 1. 研修を受けた 70%以上が有能なラボ技術者としての十分なレベルを獲得する。（達成済）

検査所技術者の能力は、「第２章プロジェクトの活動 2-3-1 検査技術の能力向上 2) 検査所技術者の技術研修・支援方針」で述べたように、プロジェクトが目指すレベルとしての「妥当性確認」技術が習得されたかどうかをラボ技術者スキルマップ[3]に基づいて、専門家の判断により有能と認められた技術者数は下表の通り。

表 3-12　研修の結果として専門家が有能と認めた技術者数（CSM）

現在の検査所技術者数		機器別の主な指導項目と専門家が有能と認めた技術者数		他のスタッフ	検査所技術者の経験年数
GC	2	GC: 農薬の測定条件、解析方法	2		10 年以上（4）
LC	3	LC: アフラトキシン測定など	2		5 年以上（2）
AA他	3	AA: 重金属、脂肪抽出器	2		3～5 年（1）
Micro	1	Micro: 微生物検査の妥当性確認	1		1 年未満(2)
(合計)	9	（合　計）	7		

CSMにおける現在の技術者９名中７名が妥当性確認技術を習得し有能なレベルに達した。
（目標70%に対して77.8%の技術者が有能なレベルに達したといえる）

指標 2. ラボのマネジメント（質管理）が ISO/IEC17025:2017（最新版）を満たすように改善される（達成済）

CSM ラボは、今まで ISO17025:2005(旧版)を持っており、キルギス認定センター(KCA)から ISO/IEC17025:2017(新版)の認定を 2020 年 3 月に取得している。ISO17025 に基づいてラボマネジメントを実施しており、指標は達成されていると言えるが、常に改善が必要である。

但し、認定機関の KCA から審査時に微生物検査の不確かさについて検証するようにとの指摘があり、今回の研修実施時に微生物検査専門家から不確かさの研修と指導を受け、プロジェクトは

[3] 2-3-1 検査技術の能力向上 b.プロジェクトが目標とするラボ技術者のレベルを参照のこと

その証明書を発行した。

検査所のマネジメント（品質管理）状況について、内部精度管理の専門家が重金属分析における試験法について、監査を行った。本検査所は機器や試薬の管理、試験法、試験結果の管理などラボマネジメントの観点からほぼ適切に実施されていると言えるが、今後対応すべき課題などについて以下に示す

表 3-13 CSM ラボマネジメント監査結果

監査対象の試験法及び結果	●重金属（Cd, Pb, As, Hg）、マイクロウェーブ+ ICP 試験法 標準品、試薬管理：適切 器具、機器の管理：適切 純水装置の管理、水質：適切 試験結果の管理、QC：適切 外部精度管理試験結果：良好 問題点・課題 -前処理を詳細に記述した SOP がまだない。 -専門家による妥当性確認試験/検証試験の手順が決まるのを待って実施、評価をする。 -結果レポートフォームの検討が必要
指導、情報提供、トレーニング等	乾式灰化法改善確認試験、AAS 操作・メンテナンス確認・Cd 不検出原因調べ
SOP 作成	複数の GOST 規格にまたがる乾式灰化法、マイクロウェーブ前処理法、AAS 測定法を一つにまとめた形の SOP を作成する予定。
今後の課題	マイクロウェーブ前処理での AAS 試験法については確立して妥当性確認試験を実施し、それと従来の AAS 測定分をまとめて SOP 化しなければならない。また、AAS は重大な不調は今のところないが正規業者による点検は今後必要である。

3-1-5　プロジェクト目標

指標 1. 妥当性確認又は検証され信頼性が確保された方法の数が 10%増加する。
（信頼性が確保された検査方法の数の増加は全て 10%以上であり達成済）

当初、生乳及び乳製品の品質と安全性についての適合性評価を検査所で実施されていることの指標として発行された検査証明書（プロトコル）数を設定したが、プロジェクト前後で妥当性が確認された方法で検査されたかどうかを確認することは困難であり、更に証明書に記載される分析項目数なども検査所毎に異なることから修正された。

プロジェクトが目指すのは、既存の分析方法を妥当性確認により改善し信頼性が確保された方法を検査所として確立することである。プロジェクト開始前(2018 年)とプロジェクト終了時点(2023 年末)の検査所において妥当性が確認された方法の件数を比較した。

表 3-14 各検査所における信頼性が確保された試験法の件数

CVDE Lab

	Before the project Year 2018	Year 2022	End of Year 2023
Antibiotics	2 (ELISA)	7 (ELISA, LC-MS)	7 (ELISA, HPLS-MS)
Mycotoxin	-	1 (HPLC)	2 (HPLC)
Heavy metal	-	4 (AA)	4 (AAC)
Pesticide	-	6 (GC, GC-MS)	6 OHP (GC, GC-MS)
Acidity	-	1	1
Gravity	-	1	1
Fat content	-	1	1
Total number of method	2	21	22

DPSSES Lab

	Before the project Year 2018	Year 2022	End of Year 2023
Antibiotics	-	7 (ELISA, HPLC)	6 (HPLC-MS)
Mycotoxin	1 (TLC)	2 (HPLC)	2 (HPLC)
Heavy metal	5 (Voltammetry, calorimetry, AA)	7 (AA, Voltammetry)	7 (AA, Voltammetry)
Pesticide	1 (TLC)	6 (GC)	6 (GC)
Acidity	1 (Titrimetric)	1 (Titrimetric)	1 (Titrimetric)
Melamine	1 (HPLC)	1 (HPLC)	1 (HPLC)
Benzopyrene	1 (HPLC)	1 (HPLC)	1 (HPLC)
Trans fatty acid isomers	--	4 (GC)	4 (GC)
Milk fat in butter	--	1 (Titrimetric)	1 (Titrimetric)
Sorbic and benzoic acids	-	-	2 (HPLC)
Vitamins A, B1, B2	-	3 (HPLC)	3 (HPLC)
Total number of method	10	33	34

CSM Lab

	Before the project Year 2018	Year 2022	End of Year 2023
Antibiotics	0	1 (HPLC)	1 (HPLC)
Mycotoxin	1 (TLC)	1 (HPLC)	1 (HPLC)
Heavy metal	2 (Voltammetry, calorimetry)	12 (ICP)	12 (ICP)
Pesticide	1 (TLC)	2 (GC)	2 (GC)
Acidity	1 (Titrimetric)	1 (Titrimetric)	1 (Titrimetric)
Gravity	1	1	1
Fat content	1	1 (Soxhlet)	1 (Soxslet)
Moisture	1	1	1
Total Nitrogen	1	1	1
Radionuclide	0	2 (Radio meter)	2 (Radio meter)
Microbiology	4	6	6
Total number of method	13	29	29

キルギス乳製品を EAEU 加盟国に輸出するために技術規則の要求事項に従っていることを示す検査証明が必要であるが、以前は抗生物質や重金属などの食品の安全性を保証するための種々の項目を検査することができず、乳業会社はカザフスタンなど海外の検査機関に検査依頼をしてい

た。そのためロシアからの支援により、必要な検査機材や薬品が調達され、新規導入機材の活用が急務であった。

プロジェクトは、信頼性が確保された分析方法の確立と各検査所が抱える課題解決による技術者の能力向上を目指し、必ずしも EAEU 技術規則の要求項目全てを分析可能にすることが目標ではなかったが、プロジェクト期間中に各検査所で新たな機材で検査が可能になった項目（下表の赤字部分）は、検査所の分析処理能力改善に寄与したといえるし、プロジェクトによる技術移転の成果と言える。

表 3-15　各検査所における試験項目（2023 年 12 月現在）

a.　獣医衛生検査院　獣医診断試験センター(CVDE)化学及び毒性学検査室

試験対象品目	参照書類	試験の名称	試験法
生乳及び乳製品	CU TR033/2013（生乳及び乳製品の安全性について）	抗生物質の残留分析	GOST 32219-2013(ELISA 定性分析)HPLC 及び LC-MS/MS による抗生物質分析（KCA 未登録だが開発済）
		残留抗生物質の分析 ・テトラサイクリン ・クロラムフェニコール ・ストレプトマイシン ・ペニシリン	ELISA method MVI. MN 3951-2015 MVI. MN 2436-2015 MVI. MN 2642-2015 MVI. MN 5336-2015 KMS GOST R 54904-2019 (LC-MS)
		アフラトシキン M1 分析 アフラトシキン B1 分析 オクラトキシン分析	GOST 30711-2001 (HPLC) GOST 30711-2001 (HPLC) (KCA 未登録だが導入済)
		毒性元素分析 ・カドミウム ・鉛 ・水銀 ・ヒ素	GOST EN 14084-2014 GOST EN 14084-2014 GOST R 53183-2008 GOST 31707 - 2012 (EN 14627: 2005) (AAC)
		有機塩素系農薬(OCPs)分析 －α，β，γ-HCH -DDT,DDE,DDD GC-ECD による生乳中有機塩素系農薬分析(HPLC, LC-MS/MS)	GOST 23452-2015 SOP-13-2019 (GC and GC-MS)
		酸度分析	GOST 3624-92 (section 3)
		比重分析	GOST 3625-84 (section 2)
		脂肪分析	GOST 5867-90 (section 2)

b.　保健省(MOH)疾病予防衛生疫学監督部(DPSSES)化学分析中央研究所

試験対象品目	参照書類	試験の名称	試験法
生乳及び乳製品	SanPiN 2.3.2.1078-01 TP No.84 TR CU 033/2013 CCM 712:2004 CCM 724:2005 CCM 719:2004	酸度（滴定） メラミン（HPLC） ベンゾピレン(HPLC) 脂肪、水分 乳脂肪質量分率 トランス脂肪酸 脂肪酸のメチルエステル	GOST 30305.3-93 MUK 4.1.2420-08 GOST 32258-2013 GOST 5867-90 GOST 34178-2017 GOST 31754-2012（GC） GOST R 51483-99

	… GOST P 52054-2003 etc.	ソルビン酸、安息香酸	GOST ISO 9231-2015 (HPLC)
		毒性物質分析 鉛、カドミウム、水銀、ヒ素、銅、亜鉛	GOST 26929-94 GOST 312262-2004 GOST 26929-86 etc.
		アフラトキシン M1 オクラトキシン A	GOST 34049-2017 (HPLC) GOST 32587-2013 (HPLC)
		残留農薬 HCH (GC), DDT and its metabolite dioxin	GOST 23452-2015 (GC) GOST 23452-2015 (GC) GOST 31983-2012
		抗生物質 クロラムフェニコール、テトラサイクリン、ストレプトマイシ etc.	GOST 33426-2015 (HPLC) スルフォアミド、ニトロイミダゾール、ペニシリンなどのLC-MS/MSによる分析 GOST R 54904-2012) (KCA未登録だが導入済)
		Vitamin A, B1, B2	GOST R 54635-2011 (HPLC)

c.　経済商務省　度量衡センター(CSM)　食品検査所

試験対象品目	参照書類	試験の名称	試験法
乳製品及びチーズなど	TR CU 033/2013 TR CU 021/2011, GOST718-84 他	脂肪分、水分及び乾燥重量、比重、総窒素量など	GOST 5867-90 (脂肪) (ソックスレー法) GOST 3626-73 (水分) GOST 3625-84 (密度) GOST 3624-92 (酸度)) GOST ISO 5983-2-2016 (総窒素) GOST 33490-2015 植物油) GOST 31504-2012 保存料(HPLC) GOST 31754-2012 トランス脂肪酸 GOST R 51483-99 メチルエステル
		毒性物質 鉛、カドミウム、亜鉛、銅、ヒ素、水銀、スズ	GOST 31262-2004 鉛、カドミウム GOST 31262-2004 ヒ素 GOST 26930-86 水銀 GOST 26927-86 スズ (ICP による重金属分析は KCA 未登録だが導入済)
		農薬 (HCH, DDT 等)	GOST 23452-2015 (GC)
		抗生物質	HPLC による分析 (KCA 未登録)
		放射性核種 (セシウム、ストロンチウム)	GOST 32163-2013 GOST 32161-2013
		アフラトキシンB1, M1	GOST 30711-2001(TLC)
		微生物検査	GOST 32901-2014 一般生菌数 GOST 30347-2016 大腸菌群 GOST 31659-2012 黄色ブドウ球菌 GOST 33566-2016 病原性細菌

（出所：エンドライン調査報告書からの情報，2023 年 10 月時点）

＊GOST 規格：ロシア及び独立国家共同体の国家標準規格

指標 2.　ラボマネジメントの質管理を改善するための管理書類の数がプロジェクト活動により増加する。　（達成済）

プロジェクトは、検査室における機器の維持管理や目的に応じた分析方法の改善指導を行っているが、検査所のマネジメントの質管理を徹底し、改善された技術や手法を後進の技術者につなげていくためにも標準作業手順書(SOP)を作成しておくことが重要である。現時点で各検査所が所有する管理資料を以下に示す。

表 3-16 各検査所におけるラボマネジメントのための管理書類

a.　獣医診断検査センター（CVDE）検査所

Category	Name of documents
Manual	Regulations on the Department of Chemical-Toxicology and VSE of the Center for Veterinary Diagnostics and Expertise
Regulations	Technical Regulations of the Customs Union: 021/2011, 033/2013, 034/2013, 040/2016
SOP-01-2014	Meat and meat products. Qualitative method for determining antibiotic residues using the Premi®Test test kit" (edition 2, 2019).
SOP-02-2014	Intermediate check of the operation of automatic dispensers” (edition 2, 2019).
SOP-03-2015	FISH. Qualitative method for determining residual amounts of antibiotics using the Premi®Test test kit” (edition 2, 2018).
SOP-04-2015	EGG. Qualitative method for determining residual amounts of antibiotics using the Premi®Test test kit" (edition 2, 2018).
SOP-05-2015	Determination of residual amounts of chloramphenicol in meat and milk by enzyme immunoassay using RIDASCREEN® Chloramphenicol test systems (quantitative method)” (edition 2, 2018).
SOP-06-2015	Determination of residual amounts of tetracycline in meat and milk by enzyme immunoassay using RIDASCREEN® Tetracyclin test systems.” (edition 2, 2018).
SOP-07-2015	Determination of residual amounts of streptomycin in meat and milk by enzyme immunoassay using RIDASCREEN® Streptomycin test systems.” (edition 2, 2018).
SOP-08-2015	Determination of residual amounts of penicillin in meat and milk by enzyme immunoassay using RIDASCREEN® Penicillin test systems” (edition 2, 2018).
SOP-09-2019	On DNA extraction from food and animal feed using SureFood® PREP test systems” (edition 1, 2019).
SOP-10-2019	Identification of meat and raw material composition of meat products using the SureFood® test kit. ¥(edition 1, 2019).
SOP-11-2015	Screening of GMOs using the SureFood® GMO Screen 4plex 35S/NOS/FMV +IAC test kit.” (edition 1, 2019).
SOP-12-2015	Identification of soybean line using the SureFood® GMOID RoundupReadySoya test kit” (edition 1, 2019).
SOP-13 2019	Sample preparation of products of animal origin using the QuEChERS purification system and determination of residual amounts of organochlorine pesticides using GC, GC-MS according to GOST 23452-2015; GOST 32308-2013; KMS GOST R 57849:2019" (edition 3, 2023).
SOP-14 2019	Validation of the analytical method for the quantitative determination of cadmium, lead and copper by atomic absorption spectrometry with electrothermal detection.” (edition 1, 2019).
SOP-15-2019	On sample preparation of products of animal origin (milk, meat, honey) using the QuEChERS extraction and purification system, to determine the residual content of chloramphenicol by high-performance chromatography-mass spectrometry (HPLC-MS/MS) according to KMS GOST R 54904-2019" (edition 2, 2023)
SOP-16-2019	Determination of residual content of aflatoxin M1 in milk. Purification using immunoaffinity chromatography and determination by high-performance liquid chromatography (HPLC) according to GOST 30711-2001" (edition 2, 2023).

b.　疾病予防衛生疫学監督部（DPSSES）検査所

Category	Name of documents

Regulations	Regulations of the Laboratory Testing Center
	Regulations of the Laboratory of Chemical Analytical Research
Job description	Job description of the head of the laboratory department
	Job description of a specialist for sanitary and hygienic laboratory tests of Laboratory of Chemical Analytical Research
	Job description of a laboratory assistant of sanitary and hygienic laboratory tests, Laboratory of Chemical Analytical Research
	Job description of a laboratory cleaning specialist of sanitary and hygienic laboratory tests, Laboratory of Chemical Analytical Research
PR SM 4.1 4.2	Impartiality. Confidentiality
PR SM 5	Structure
PR SM 6.2	Personnel
PR SM 6.3	Premises and environmental conditions
PR SM 6.4, 6.5	Equipment. Metrological traceability
PR SM 6.6	Products and services provided by external suppliers
PR SM 7.1	Review of requests, tenders and contracts
PR SM 7.2, 7.6.	Selection, verification and validation of methods. Estimation of measurement uncertainty
PR SM 7.3	Sampling
PR SM 7.4.	Handling of test objects
PR SM 7.5.	Technical records
PR SM 7.7.	Ensuring the reliability of results
PR SM 7.8.	Presentation of results reports
PR SM 7.9.	Complaints (claims)
PR SM 7.10, 8.7.	Management of non-conformities. Corrective Actions
PR SM 7.11.	Data and Information Management
PR SM 8.3,　8.4	Management system documents management. Records management
PR SM 8.5	Actions related to risks
PR SM 8.6	Internal audits
PR SM 8.9	Management review
RI. PR. SM 6.4	Instructions for stripping voltammetry when analyzing a sample (for simultaneous determination of mass concentrations of Zn, Cd, Pb, Cu)
RI. PR. SM 6.4	Instructions for preparing standard solutions (metals)
F3.PR SM 6.3.	Instructions for washing glassware
RI. PR. SM 7.7-1	Instructions for constructing the Shewhart Control Chart
RI. PR. SM 7.7-2	Instructions for interlaboratory comparison
RI. PR. SM 6.4-1	Instructions for constructing a calibration graph
RI. PR. SM 7.2-1	MUkit - User Guide
RI. PR. SM 7.7.	Instructions for monitoring the accuracy (correctness and precision) of laboratory tests
RI. PR. SM 6.4.	Instructions (rules) on technology and fire safety
RI. PR. SM 6.4.	Instructions for fire extinguishing measures
RI. PR. SM 6.4.	Instructions for neutralizing spilled caustic and toxic substances
RI. PR. SM 6.4.	Instructions for safety precautions when working with glass utensils
RI. PR. SM 6.4.	Instructions for sampling water sent to determine residual amounts of organochlorine pesticides
RI. PR. SM 6.4	Equipment operating instructions (63 in quantity)
TOTAL: 104 guidance documents for Laboratory of Chemical Analytical Research	

c.　度量衡センター（CSM）食品検査所

Category	Name of documents
SOP-01	UV spectrometer Evolution 350
SOP-02	Inductively coupled plasma optical emission spectrometer ICAP 7000 SERIES
SOP-03	Voltammetric analyzers AKV-07
SOP-04	Soxhlet extraction systems E-500 SOX
SOP-05	Gas chromatograph Trace 1310 GC
SOP-06	Digital thermometer-hygrometer RST2310
SOP-07	Spectrometer-radiometer RADEK

SOP-08	Electronic laboratory scales CE4202-S
SOP-09	Microbiological safety box BMB-II-"Laminar-S" -1.2
SOP-10	Kjeldahl "Keltran"
SOP-11	Evaporative apparatus “Heating Bath B-300 Base”
SOP-12	Refractometer R4
SOP-13	Thermostatic water bath with stirring, 4 liters WB-4MS, Biosan
SOP-14	Moisture Analyzer Sartorius

指標 3. HACCP 監査のための監査チェックシートが開発され、経済商務省に承認される。（達成済）

1) 保健省疾病予防衛生疫学監督部(DPSSES)作成の監査チェックシート

疾病予防衛生疫学監督部の監査員は、乳製品バリューチェーンにおける乳製品加工から製品流通、市場までで、特に製品の安全性確保が担当分野である。日本の厚労省による工場監査チェックシートを紹介して、乳製品加工工場のためのチェックシート作成を支援した。以下に DPSSES チェックシートの監査項目を示す（参考までに獣医衛生検査院のチェックシートも比較する)。

表 3-17 疾病予防衛生疫学監督部の乳製品工場監査チェックシート

	DPSSES	VS
目的	乳製品工場の原料と製品の安全性確認のための監査チェックリスト **工場の営業許可を与える監査の頻度を決定するためリスク評価の一環として実施される（国内の消費者保護を最終目的とする)。**	HACCP 原理に基づき乳・乳製品製造施設の監査のためのチェックシート **EAEU 域内で乳製品が獣医衛生要件を満たしているかどうか工場を監査し、特に輸出のための獣医証明書を与えることを目的とする。**
書類審査	製造管理プログラム、原材料及び製品の品質安全性確認、包装材料の安全性確認	原料や製品の配送先や日時に関する書類やトレーサビリティ
施設装置の設計	施設レイアウト及び製造フロー、交差汚染防止、壁や仕切り、居住施設などからの適切な距離	製造施設や周辺の衛生管理、ハザード防止、施設の衛生管理、
製造装置	壁や床、窓などの耐水性や有害な物質を含まないなどの材質、動物や害虫などへの対策や記録、手洗いや更衣の施設、適切な照明や換気、トイレや下水処理、原材料や製品などの保存状況など	内部の壁、天井、床の衛生、照明や換気、 温湿度管理、窓や床などの衛生、排水処理、洗浄・殺菌など、トイレなどの衛生管理 施設改修や保守管理とその記録
運営管理(GMP)	製品の仕様、モニタリングとその記録、温度計や金属検出器などの校正、アレルゲン管理	不要なものは持ち込まない
測定機器	測定機器の状況や記録の管理	測定機器や各種装置の定期点検と妥当性確認
原料から製品までの安全性確保要求	HACCP 原則に基づく手順、 HACCP チーム、製品仕様など、 HACCP7 原則	衛生管理計画、HACCP チーム、計画の実施（マニュアルや手順書など)、妥当性確認と評価 HACCP7 原則
水供給	安定的な安全な水供給、品質と安全性が確認された水供給、氷がある場合の安全性確認	飲用適の水使用、貯水槽の定期洗浄と殺菌
貯蔵と輸送	製品と原料の分別貯蔵、ゾーニング、輸送、賞味期限、測定機器の校正、記録、製品回収の手続きなど	製品回収手順
製品の表示と包装	製品の消費者包装、包装ラベル、製造日及び賞味期限の表示、アレルギー表示、輸送包装のラベル	
輸送、製造機器の洗浄殺菌	車両・製造施設の洗浄・殺菌計画、定期的妥当性確認、機器、殺菌の計画と記録、害虫や動物、殺菌用倉庫、洗浄・殺菌方法の定期見直し	洗浄や殺菌のための薬品の適正使用と保管 害虫やネズミなどの調査と対策
廃棄物管理	廃棄物用容器、廃棄物保管場所と方法	廃棄物や排水の処理手順 廃棄物用容器の管理
従業員への研修	定期健康診断とその記録、日々の健康状態確認、外来者へのルール、作業服、手洗い設備、衛生管理規則、応急処置キット、研修プログラムと記録	食品取扱者への研修、研修頻度、研修の定期的な評価、手洗いとその設備、職員の衛生状態管理、作業服、定期的な食品衛生研修、

2) 農業省獣医衛生検査院による監査チェックシート作成

獣医衛生検査院の監査員は、乳製品バリューチェーンにおける生乳生産段階から加工工場まで、特に農家から集乳場、加工工場における生乳の安全性確保が担当分野である。HACCP 監査を行うための独自のチェックシートがないことから、日本における生乳生産管理のチェックシートサンプルと工場における監査チェックシートを紹介して、集乳場と乳製品加工工場のためのチェックシート作成を支援し、獣医衛生検査院が自らチェックシートを作成した。これらのチェックシートを使用して、農家や集乳場、乳製品加工工場の監査試行を行い、その結果を踏まえて改善を実施している。集乳場の監査のためのチェックシートを以下に示す。

表 3-18 集乳場の獣医衛生監査のためのチェックシート

監査ポイント	監査基準
書類の要求事項	獣医衛生に関する生乳、生産された場所（住所）、生産日の情報
	施設は、適切な獣医衛生検査書類があること
	生乳の安全性を担保するため公認の機関が発行した獣医添付書類がある。
	獣医添付書類の有効期間が、発行日から１ヶ月を超えていない
生乳の要求事項	分娩日後 7 日以内、分娩開始日前 5 日以内（分娩前）、病気の動物および検疫中の動物からの乳でないことが確認されている。
	牛乳中の脱脂固形分の質量分率は 8.2%以上
	牛乳中の潜在的ハザードレベルが定められた許容レベルを超えていない
	牛乳中の微生物および体細胞のレベルは、定められた許容レベルを超えていない
	生乳の品質指標は確立された要件を満たしている
生乳の保管と輸送の要求事項	生乳は搾乳後にきれいにされ、4℃±2℃での２時間以内で冷却
	生乳は、乳製品加工前に、4℃±2℃ の温度で 36 時間（輸送時間を含む）以内に保管するものとする。
	低温殺菌を含む生乳の予備熱処理をする場合、熱処理計画（温度、期間）は生乳の出荷書類に指定されている。
	農産物生産者は、生乳生産において、食品と接触する材料の安全性の要件を満たす設備と材料を使用する。
	冷却された生乳を加工場に輸送する際、加工開始時の温度は 10℃を超えない
	生乳の輸送は、食品と接触する材料の安全性の要件を満たす材料で作られた、しっかりと蓋が閉まる容器で行われなければならない。輸送手段は、必要な温度を確実に維持する必要がある。
生乳トレーサビリティの要求事項	生乳生産工程のすべての段階でトレーサビリティが確保されている。
	生乳の出荷書類情報： - 生乳の製造者の名前と所在地、 - 生乳の容量（リットル）または重量（kg ； - 生乳の出荷日時（時、分）； - 生乳の出荷時の温度（℃）；
	以下の伝染性家畜伝染病に罹患していない農場で飼育された健康な家畜から搾乳された生乳： - 口蹄疫 - 国または地域の行政区域において過去 12 ヶ月間、 - 牛疫 - 国または地域の行政区域において過去 24 ヶ月間、 - 小動物の疫病 - 国または地域の行政区域において過去 36 ヶ月間、 - 伝染性胸膜肺炎 - 国または地域の行政区域において過去 24 ヶ月間、 - 牛疫 - 国または地域の行政区域において過去 24 ヶ月間

表 3-19 食品企業の獣医衛生監査実施のためのチェックシート

監査ポイント		基準
一般衛生管理		
企業の責任	衛生管理計画の作成	衛生管理計画は承認されているか、一部のみか 食品取扱者は衛生管理計画を理解しているか
	衛生管理計画は導入済か	マニュアルは完備されているか、一部のみか
	工場職員への研修実施	研修対象は全員か、一部か。その頻度は
	食品衛生管理の記録	文書と管理・記録方法
	計画と手順の検証	衛生管理計画の検証と必要に応じて修正
一般衛生管理事項	食品衛生責任者の選定	食品衛生管理者の選定
	施設の清潔さ	定期清掃、危害防止のための施設清掃
	不要なもの	工場内に不要なものがない
	壁や床の清潔さ	内部の天井、床の清掃
	照明と換気	十分な照明と適切な温湿度管理
	窓とドア	害虫などへの対策や空調
	排水処理	排水設備の衛生管理
	トイレ	定期清掃と消毒
	機器や器具の消毒・修理	洗浄や消毒など、機器の維持管理と記録
	器具や機器類の定期検査	温度計や滅菌機などの定期確認、校正証明
	手洗い機器	適切な手洗い、乾燥、消毒器具
	清掃器具	清潔な清掃器具
水質管理	飲用適の水	製造で使用される水の年１回の品質検査
	貯水タンクの定期清掃	定期的な洗浄
	浄水器	定期的な浄水装置の点検記録
害虫管理	モニタリング調査と管理	窓やドアの害虫対策、殺鼠剤の使用など
廃棄物処理	廃棄物及び排水処理	廃棄物の保管と処分
職員の衛生	職員の健康管理	職員の健康診断とその記録
	衛生的な作業服	靴、帽子、マスクなど
	職員の衛生活動	不要なものは身に着けない、手洗いなど
食品の検査	検食	１回 300 食以上又は１日 750 食以上製造する場合
	供給先、時間、温度、個数などの情報	原材料と製品の供給場所、時間など トレーサビリティ
回収	回収手順	消費者への通知、回収、報告などの手順
HACCP に基づく衛生管理		
ハザード分析	ハザードリスト	各段階でのハザード確認と管理手段
重要管理点の設定	CCP 設定の決定	ハザードを許容レベルまで防止、減少させるためのプロセスの決定
管理基準の設定	CCP のための管理基準の設定	ハザードの発生を防止、減少させるための管理基準(CP)の設定。CL は温度や時間などの測定可能な指標。
モニタリングの設定	CL のモニタリング方法の設定	連続的又は一定の頻度で追跡できる方法とその記録。
是正措置の実施	CL からの逸脱における改善措置	モニタリングで管理レベルを逸脱しているときの改善措置とその資料など
検証方法の導入	定期的な検証手順	個々及び全体の HACCP 計画検証、
記録と保存	モニタリングや検証結果の資料	モニタリング結果記録、CL からの逸脱時のレビュー記録など、
その他	研修の出席簿	食品衛生管理者の出席
	原料及び供給先情報	原料、製品などの記録

3-2　その他の成果

3-2-1　酪農セクターへのインパクト

本プロジェクトは、政府の規制機関としての検査所や監査機関の適合性評価機能強化のための人材育成を目的としたものであるが、乳製品の製造プロセスの HACCP に基づく管理や製品の品質や安全性確保は、酪農産業においても共通の課題である。プロジェクトの実施により、行政官の能力強化を通じて民間企業における製造から流通までプロセスの改善や規格に適した品質や安全性を有する製品の市場への供給にもつながり、酪農産業の振興にも貢献すると思われる。

EAEU で流通を許可されたキルギスの乳業会社は、プロジェクト開始時の 2019 年には 24 社だったが、2023 年には 46 社になっている（チュイ州だけでなく全国で増加している）。

今後輸出量の増加も見込まれることから、乳製品における適合性評価の順守はますます重要になると思われる。

表 3-20　EAEU で流通を許可されたキルギスの乳業会社数年度比較

	2019 年	2021 年	2023 年
チュイ州	11	17	19
オシュ州		5	6
ビシュケク市	4	4	7
タラス州	4	4	5
イシククリ州	4	4	6
ナリン州	1	1	1
ジャララバード		1	2
合計	24	36	46

（出所：エンドライン調査報告書）

第４章　プロジェクト実施上の課題と工夫

第４章　プロジェクト実施上の課題と工夫

4-1 プロジェクト実施上の課題とその対応策

4-1-1 地方における食品衛生状態の把握と研修ニーズ調査

1） 中央検査所と地方検査所における食品検査サービス

保健省疾病予防衛生疫学監督部(DPSSES)のビシュケクにある中央検査所と地方検査所のキルギス認定センターへの登録検査項目の比較を以下に示す。

表4-1 中央検査所と地方検査所における食品検査サービス（バターの例）

分析項目	中央検査所のKCA登録項目	地方検査所のKCA登録項目
サンプル調製		GOST 26809.2-2014
脂肪分	GOST 34178-2017	GOST 5867-90 (acid method)
水分		GOST 3626-73 (gravimetry)
農薬残留（DDT, HCCH等）	GOST ISO 3890-1-2013 (GC)	GOST 23452-2015(TLC)
トランス脂肪酸	GOST 31754-2012 (GC)	-
食品添加物（安息香酸他）	GOST ISO 9231-2015(HPLC)	-
重金属	GOST 31262-2004(voltammeter) GOST 30178-96(AAS)	-
抗生物質	GOST 33526-2015 (HPLC) MVI . MH 4652-2013 (ELISA)	-
検査所としての主な役割	EAEU技術規則に従い食品工場が必要とする適合性宣言のための検査証明書のデータの提供及び工場監査や市場モニタリングなどのための検査	地方の食品工場は自社に検査施設がないため、その工場と契約して製品の品質検査サービスを行う。

中央検査所も地方検査所も検査サービスを実施するためにキルギス認定センター(KCA)により、検査項目毎にISO/IEC17025認定を受けている。その意味で中央も地方の検査所も有能といえる。但し、中央検査所はGCやHPLCなど高度の分析機器が導入しているが、地方はそれらの分析機器を所有していない。地方検査所ができない分析項目を中央検査所に送ることで対応している。

中央検査所は、EAEU技術規則が要求する食品の安全性に関する適合性評価項目を検査することが行政サービスとして実施しているが、地方検査所は自社で検査施設をもたず製品の品質管理を十分にできない中小の食品企業と契約をして分析を行うことで支援や監督をしている。ロシアで乳製品の脂肪分が規定を満たしていないことから、回収措置を取られることがあったが、国全体の食品の品質を確保するためにも地方検査所の役割は重要である。

地方検査所の中でも、プロジェクト期間中訪問したオシュとカラコルはロシアなどからの分析機器を所有しており、技術者の能力向上と試薬類の確保ができれば地方拠点として食品産業への貢献が期待できる。地方検査所への支援をする場合、所有機材や対応できる検査項目に応じて優先度をつけ、検査所毎のニーズに対応するなどの対応が必要である。

2) 地方における監査研修ニーズ調査

獣医衛生検査院や疾病予防衛生疫学監督部からの要望もあり、ビシュケクを中心に行ってきたHACCP監査研修の成果を地方に展開するために生乳生産や乳製品製造段階における衛生状態の把握と監査研修ニーズを行った。

表 4-2 地方における食品衛生状態把握と監査研修ニーズ調査結果

	オシュ州	タラス州	イシククリ州
期間	2023/4/24 – 27	2023/7/4 – 7	2023/9/13 – 16
場所	オシュ獣医検査院事務所 乳業工場	カラブラ獣医検査院事務所 乳業工場、集乳場、農家	ジュディオグス獣医検査院事務所、農家、集乳場
調査結果	オシュの乳業会社の市場は国内のみ。食品衛生研修は監査員と農家、工場の両方に必要である。	地方でのHACCP研修は不十分で、食品衛生研修は、監査員だけでなく民間にも必要	食品衛生改善には農民グループが必要で、乳品質向上のための衛生管理支援が必要

地方における監査員育成の主な課題：

- 研修はビシュケクで行われているが、地方で研修を受ける機会はほとんどない
- 監査員の高齢化が進んでおり、若手の監査員が少ない
- 地方企業の HACCP 及び分析技術の研修ニーズは高いが地方での研修は未実施
- 地方事務所の監査員数が少なく、多くの工場を一人で受け持っている
- 現在政府のモラトリアム措置により監査業務は停止状態である

4-1-2 HACCPの観点からの農家及び集乳業者への衛生管理強化支援

EAEU技術規則では、乳製品製造段階におけるHACCP７原則に基づく管理が義務付けられていることから、プロジェクトではHACCP監査の研修プログラムは、乳製品加工工場におけるHACCP７原則の導入や監査チェックシートなどを中心に実施してきた。

乳製品バリューチェーンにおける衛生管理を行うためには、農家や集乳業者における乳牛や生乳及びそれらの施設の衛生状態の監査も重要になり、特に生乳の抗生物質汚染は加工業者が生乳を受け入れる際にも問題となっていることから、第２期において農場における飼養管理のための監査員研修を強化してきた。

獣医衛生検査院の監査員向け研修では、保健省の監査員向け研修で行っている工場監査に加えて、農場や集乳業者への監査も実施し、その過程で集乳場における監査チェックシートや監査員用研修マニュアルに農場や集乳場の監査についての項目も加えた。

4-1-3　ロシア連邦動植物検疫局のレポートとロシアへの輸入規制

ロシア連邦動植物検疫局（Rosselkhoznadzor）が2015年以降実施してきたキルギスへの査察結果と個別の輸入制限事例を以下に示す。（キルギス酪農企業の査察についてПредварительный отчет）

表 4-3 ロシア連邦動植物検疫局によるキルギス企業への査察事例

実施期間		分野	査察の背景	査察企業数/結果
2015	2/16-17	畜産 乳製品	・動物の疫病流行拡大	・8 社（畜産 2、乳製品 6）査察 ・キルギス関連企業に対し、EAEU 領域に製品を輸出する権利を否定
2018	8/19-23	畜産	・家畜（牛、小型牛、馬）の屠殺、解体における EAEU の要件・規範違反	・動物由来製品生産企業 3 社査察 ・2 企業を EAEU 登録簿から削除
2023	3/12-19	水産品	・チョウザメとマスの輸出量の急拡大 ・EAEU の獣医および衛生要件への違反の多発	・水産加工企業 8 社査察 ・検査を受けた企業のステータスを「認証の一時的停止」から「一時的制限」へ ・検査拒否企業のステータスを「認証一時停止」から「一時制限」へ ・その他キャビアを含む魚および水産品（マス、チョウザメ）輸出企業の「認証一時停止」、輸送の禁止
	4/10-16	乳製品	・バターの供給量が急増 ・ロシア側による国家食品監視において、EAEU の獣医学的・衛生学的要求事項の違反	・乳製品企業 5 社査察 ・全乳製品輸出企業のステータスを「認証の一時停止」へ

表 4-4 ロシア連邦動植物検疫局による乳製品輸入制限個別事例（2018 年～2023 年 7 月末）

施行年・日		対象分野（品目）	禁止・制限理由	措置	企業数
2018	2/28	乳製品 （粉ミルク、チーズ）	輸入手順違反	一時的制限	1
	5/14	乳製品 （粉ミルク、チーズ）	粉ミルク中の危険有害物質（テトラサイクリン系抗生物質）の残留検出、チーズ中のアモキシサイクリンの検出	認証の一時停止	1
	8/23	乳製品（粉ミルク）	粉ミルクから有害物質（駆虫薬）の検出	検査室管理強化	1
2019	7/22	乳製品（粉ミルク）	粉ミルクからレボミセチン（クロラムフェニコール）の検出	検査室管理強化	1
	11/7	乳製品（バター）	バターからレボメシチン（クロラムフェニコール）の検出	検査室管理強化	1
	11/29	乳製品（チーズ）	BLCP（大腸菌群）の検出	検査室管理強化	1
	12/27	乳製品（脱脂粉乳）	クロラムフェニコールの検出	検査室管理強化	1
2020	4/15	乳製品（脱脂粉乳）	残留薬物（スルファメタジン)の 検出	検査室管理強化	1
	4/17	乳製品（脱脂粉乳）	残留薬物（アルベンダゾールスルホキシド）の検出	検査室管理強化	1
	4/29	乳製品（脱脂粉乳）	残留薬物（アルベンダゾールアミノスルホン、アルベンダゾールスルホン、フェンベンダゾール）の検出	検査室管理強化	1
	6/8	乳製品（脱脂粉乳、バター）	脱脂粉乳から薬物（スルファメタジン)、バターから酵母およびカビの検出	一時的制限	1
	9/16	乳製品（チーズ）	残留薬物（オキシテトラサイクリン、クロルテトラサイクリン）の検出	検査室管理強化	1

	10/21	乳製品（チーズ）	残留薬物 （シプロフロキサシン） の検出	検査室管理強化	1
	12/23	乳製品（脱脂粉乳）	植物性脂肪含有の検出	検査室管理強化	1
2021	3/30	乳製品（チーズ）	ソルビン酸の基準値超過	検査室管理強化	1
	4/16	乳製品（バター	テトラサイクリン基の検出	検査室管理強化	1
	6/9	乳製品（粉ミルク）	アルベンダゾールアミノスルホン、アルベンダゾールスルホキシド、スルファメタジンの検出	検査室管理強化	1
	10/15	乳製品（バター）	バターから酵母およびカビの検出	検査室管理強化	1
	12/1	乳製品	2021 年 12 月 1 日以降に製造された製品の輸入の一時制限	一時的制限	1
2022	5/４	乳製品（バター）	ソルビン酸の検出	検査室管理強化	1
	5/12	乳製品（バター）	バターの中にステロール GLC 法による植物油脂の検出	検査室管理強化	1
2023	4/20	乳製品	査察結果	認証の一時停止*	全

*「認証の一時停止」は、監査の過程で認証製品の製造における違反が明らかになった場合、発行された適合証明書の有効性を一時停止する権利を有するもの。

ロシア連邦動植物検疫局が2023年4月に実施したキルギス乳製品製造会社を査察したときの報告からの提言を基に、キルギスが検討すべき項目をプロジェクトとして以下の提言をする。これらは、次のプロジェクトの内容を検討する際の参考になると思われる。

表 4-5 ロシア連邦動植物検疫局によるキルギス乳業会社査察レポート提言要約

No.	ロシア連邦動植物検疫所からの提言	プロジェクトが提案する検討事項
1	原材料から最終製品までの効果的な食品トレーサビリティシステムの開発と実施をすること	- どの抗生物質がいつ乳牛に投与されたかの記録をする仕組み - 獣医証明書と関係書類の作成 - 製造工場における温度管理記録 - 賞味期限と製造年月日の表示 - データの有効な転送方法
2	検査所の検査を改善して（食品の安全性に関する）国家食品モニタリングシステムの開発と実施すること	EAEU 技術規則の要求事項の食品安全に関する項目における検査所の適用範囲かどうかを要確認
3	生乳生産において動物用医薬品とその残留量についての明確な手順を導入すること	動物用医薬品投与は農家で記録されるべきであり、その記録は加工工場に送付されるべきである
4	EAEU 技術規則の要求事項への違反をなくし、検査時の適合性保証システムが必要である（規格及び安全性）	食品モニタリングで食中毒のリスクが分析され、その状況が把握され対応策が検討される。モニタリングのサンプル数が検討されるべきである。
5	検査所でのモニタリングの際食品安全でない物質の検出や返品などについての調査手順の開発と実施をする。の調査の実施	欠陥製品リコールデータベースを検討すべきである。
6	EAEU 域内で流通するために登録された食品企業の検査を実施する。	工場や市場の検査を改善すべきである。
7	生乳生産農家と乳製品加工会社にサービスを提供する民間獣医師の業務を監査すること。	監査員と民間獣医師のトレーニングシステムを改善すべきである。

4-2　プロジェクト実施上の工夫

4-2-1 他ドナーとの情報共有と支援活動連携

1) PTBによる検査所支援　(FLAQUM支援との連携)

ドイツ物理工学研究所(PTB)は、2019年から2022年までキルギスにおいて品質インフラにおける品質関連サービス強化支援の一環として、検査所への技術協力をしてきた。主な活動は、以下の通り。

- 検査所メンバーとラボラトリークラブ会議を開催し、活動計画策定のための協議を実施
- 地方や中央の検査所に講師を派遣し、機器分析などの実習付きの研修を実施
- FLAQUMプロジェクトが乳製品を対象としていることから、PTBはドライフルーツやハチミツなどを対象とした分析技術移転を実施
- ヨーロッパ向けの輸出促進を目的として、EU基準を基に新たな分析技術の指導を実施
- 技能試験(PT)のワークショップとサンプル調達を実施
- 新型コロナ感染拡大期間中はオンラインでも研修も実施

表 4-6 PTBによる検査所支援実績（2023年３月～６月）

検査所の研修対象	研修内容
DPSSESカダムジャイ地方センター	ドライフルールの残留農薬分析技術開発
DPSSESオシュ市センター	ドライフルールの残留農薬分析技術開発
CVDEオシュセンター	ハチミツの化学分析技術開発
DPSSESオシュセンター	ハチミツの化学分析技術開発
CVDEオシュセンター	ハチミツの抗生物質分析技術開発
CVDEビシュケクセンター	ハチミツの残留農薬分析技術開発
CVDEビシュケクセンター	ハチミツの抗生物質分析技術開発
CSMビシュケクセンター	炭水化物、脂肪、タンパク質分析、栄養価の計算
CSMビシュケクセンター	水中の残留農薬分析技術開発

2) FAOによるHACCP導入支援

FAOは経済商務省の度量衡センター(CSM)と連携して、2022年10月31日のWorld Food Day（世界食料デー）にビシュケクのホテルで、「食品製造・加工業者のためのHACCPシステムの食品安全マネジメント技術セミナー (Technical seminar on food safety management and application of the HACCP system for food manufacturers and processors)」を開催した。FAOの技術協力プロジェクト（Assessment and improvement of institutional capacity in the field of control and management of food safety systems and international standards）の一環としてCSMのHACCP監査員や専門家など現地のリソースを活用して実施され、民間の乳業会社が参加していた。セミナープログラムの内容は以下の通り（講師は経済商務省度量衡センターのCSM食品検査所の専門家)。

表 4-7 FAOによる食品安全マネジメントとHACCPセミナープログラム

Technical seminar on food safety management and application of the HACCP system for food manufacturers and processors, timed to coincide with World Food Day and World Standards Day　Provisional date : 31 October 2022

Program	Lecturer
About ongoing food safety projects implemented by FAO: tasks, activities and intermediate results	National consultant of the FAO project
Legal aspects of food safety regulation in the Kyrgyz Republic	Expert of Kyrgyzstandart
Codex Alimentarius Commission International Standards for Food Safety	Expert of Kyrgyzstandart
Prerequisite Programs (PRPs) in food production. Analysis of the current state of the production environment of the infrastructure, the main processes of the food enterprise.	Expert of Kyrgyzstandart
12 steps and 7 principles of HACCP.　Step 1: Create a working group	Expert of Kyrgyzstandart
Step 2-5: Product Description.	Expert of Kyrgyzstandart
Step 6: Hazard assessment, selection and evaluation of control measures	Expert of Kyrgyzstandart
Step 8: Determination of critical limits for CCP; systems monitoring;	Expert of Kyrgyzstandart
Step 9-10: Nonconformity Management;	Expert of Kyrgyzstandart
Step 11-12: Verification of food safety (internal audit)	Expert of Kyrgyzstandart
Marking quality indicator	Expert of Kyrgyzstandart

4-2-2　日本の食品安全行政から学ぶ行政システム改善に向けた政策策定支援

1)　日本の食品検査ラボシステムから見た食品安全行政の検討

表 4-8 キルギスと日本の主な検査所における分析結果の用途

分析結果の用途	キルギスの検査所			日本の主な検査所		
	CVDE	DPSSES	CSM	横浜検疫所	FAMIC	都健康安全研究センター
コンプライアンス（規格基準の適合判定：検査）	○	○	○	○	○	○
モニタリング（規制効果の検証）	○	○		○	○	○
サーベイランス（規制管理の必要性を考察）	○					○
リスク評価（摂取量推定等）					○	○
主な機能	原材料安全性検査	製品安全性検査	製品規格検査	輸入食品の安全性検査	食品表示適合検査（偽装表示）	都民の安全検査・研究・監視活動

主要な支援対象であるキルギスの３検査所には、ロシアからの支援で抗生物質や残留農薬分析を行うためにガスクロマトグラフ(GC)、高速液体クロマトグラフ質量分析計(LC-MS/MS)などの分析機器がそれぞれ導入設置されており、プロジェクトで信頼性が確保された分析技術の指導を行

っている。日本でも本邦研修で訪問した主な検査所もほぼ同様の分析機器を所有し検査活動を実施している。同じ分析活動をしていても分析結果の用途がことなることが大きな違いである。本プロジェクトは、EAEUの技術規則への適合性評価システムの開発・改善のための技術支援を目指してきたが、プロジェクトのC/Pが本邦研修で行政機関やその検査所を訪問して、日本の食品安全行政のメカニズムが理解されたことと思われる。年間計画を策定し、それに基づく検査の実施、実施結果からの行政指導や監督、国民への情報公開など検査所の結果活用についての日本の取組みを参考にして、キルギス政府が食品安全行政の改善につなげていくことを期待しており、今後の支援として検討すべきと思われる。

2) 工場監査チェックシート（終了時評価からの提言対応）の改善

終了時評価の調査報告において「HACCP監査チェックシートの標準化と対象工場の段階に応じたコンサルテーション」の提言があった。保健省DPSSESと農業省VSが同じ食品工場を監査目的で訪問することについて、キルギス国内でも以前から統一の可否について議論があったが、未だに結論がでていない。

本プロジェクトでは、DPSSESとVSそれぞれへの研修において、工場監査チェックシートの改善を行ってきた。それぞれの機関は、従来から工場への監査を実施してきたが、大量生産をする食品工場にEAEU技術規則が要求するHACCP７原則に基づく管理を強化するために、監査チェックシートにHACCP監査の部分を追加することとした。

日本も食品事業者へのHACCP導入が義務化され、HACCP監査の平準化のために監査チェックシートが改正されており、キルギスにおいてもHACCP監査の標準化のために必要なことと思われるため、DPSSES、VSと協議をしてきた。

プロジェクトとしては、以下の理由で工場監査を実施する際に使用する監査チェックシートをそれぞれの機関が別のシートを使うことに問題はないと思われる。

- 監査チェックシートは、HACCP項目を追加して改善されたがDPSSESとVSで別の監査項目をそれぞれの基準に基づいて設定しているため同じフォームを使用できない
  （DPSSESはEAEU技術規則を基準にしているが、VSは技術規則に加えて獣医衛生要求も考慮する必要がある）
- 監査も目的がそれぞれ異なる：DPSSESは国内の消費者保護であり、VSはEAEU加盟国への流通のための獣医衛生証明書（国内流通を含む輸出向け）発行のためである。
- 監査チェックシート作成にあたり、双方とも最新のCodex HACCPの考え方を取り入れており、フォームは異なっても国際的流通における監査基準に適合していると言える。

現時点では、HACCP７原則導入の観点からの監査であるが、DPSSESとVSは日本における監査事例なども参考にしてコンサルテーションを含む段階的な監査などキルギスにおける食品安全行政の改善について以下の項目について検討している。

- 食品安全のための法整備強化
- HACCP食品安全マネジメントの義務化

- FSSC22000やGlobalGAPなど国際認証導入
- トレーサビリティシステム強化
- 食品表示のモニタリング
- 食品の総合的な検査
- 専門家及び企業への継続的な研修
- 国際基準に基づく製造管理システム現代化

第５章　プロジェクト実施後の活動

第５章　プロジェクト実施後の活動

5-1　本邦研修実施時にC/Pが作成したプロジェクト実施後のアクションプラン

2023年2月に実施された第1回本邦研修における成果発表会で、研修員が各C/P機関を代表してプロジェクト実施後のアクションプランを発表した。プロジェクトは、提案されたアクションプラン毎にプロジェクトの残りの期間で対応が可能と思われるものと期間中での実施が困難なため期間延長などでの対応が望ましいものとする対応案を検討した。

表 5-1 C/Pによるアクションプランとその対応策

1） アクションプラン（HACCP監査チーム）とその対応案

C/P機関	アクションプラン	プロジェクトの残り期間での対応可能性	期間延長などでの対応が望ましいもの/それ以外のもの
経済商務省 技術規則部	有機農産物の開発促進	本邦研修で日本の有機認証の説明をする。	有機畜産物の認証などの可能性あるが、日本でもまだこれから。マーケットニーズの認識要確認。
	農家へのGlobal GAPの導入	本邦研修で日本のGAPやGlobal GAPの説明をする。	GLOBAL GAPは民間認証であり、国として取り組むか要検討。そもそも、その必要性についての共通理解が最初にあるべき。
農業省 獣医衛生検査院	牛の同定及び牛肉のトレーサビリティ	本邦研修で日本のトレーサビリティの説明をする。	トレーサビリティのニーズは理解するが、内容不明。テーマが大きすぎる。
	キルギスにおける輸入動植物のトレーサビリティ	本邦研修で日本のトレーサビリティの説明をする。	トレーサビリティのニーズは理解するが、内容不明。テーマが大きすぎる。
	HACCPのための獣医監査の規則と手順の開発	農家及び集乳場のHACCP監査指導などで対応可能	
	動物由来食品のHACCP監査研修セミナー	乳製品加工工場への研修は協力工場へ一部実施済	肉製品など他の動物由来食品への拡大は、日本の事例紹介は可能だが、分野拡大は要検討。
	GAP認証研修（キルギスの食品安全戦略に基づく）	本邦研修で日本のGAPやGlobal GAPの説明をする。	GAP研修の対象品目や対象者は要確認。そもそも、その必要性についての共通理解が最初にあるべき。
	動物由来の有機食品生産研修	本邦研修で日本の有機認証の説明をする。	有機畜産物の認証などの可能性あるが、日本でもまだこれから。マーケットニーズの認識要確認。
保健省 疾病予防衛生疫学監督部	広範囲のHACCP監査員人材育成	トレーナーによる研修促進のため教材開発を支援	広範囲の内容要確認。分野か地域か？
	ラボ専門家への分析方法導入の研修、機材の導入	（ラボ技術者へのコメント）	
	食品安全のためのリスクベースの監査システム	日本の輸入食品モニタリング制度(リスクベース)紹介可能	

C/P 機関	アクションプラン	プロジェクトの残り期間での対応可能性	期間延長などでの対応が望ましいもの/それ以外のもの
	トレーサビリティシステムの導入	本邦研修で日本のトレーサビリティの説明をする。	トレーサビリティのニーズは理解するが。内容不明。
	GAP の導入	本邦研修で日本の GAP の説明をする。	GLOBAL GAP は民間認証であり、国として取り組むか要検討。
	食品の品質管理（偽装防止）	既存機器や試薬類で実施可能なら個別に対応を検討可能。	食品偽装の検査と行政対応は関心が高い分野であるが、重要度や緊急度が不明。
	（監査）チェックリストの改善	プロジェクトで監査チェックシートの改善中。	
	HACCP のための研修	プロジェクトでトレーナー育成のための HACCP 研修と教材開発支援中	HACCP トレーニングセンターのキルギス版作成は要検討。ニーズの程度にもよるが、取り組みとしては可能性あり。
	デジタル技術の導入		内容不明のため要確認。
	他のビジネスセクターとの連携		内容不明のため要確認。
	部門内での更なる協議とプロポーザルの作成提出	DPSSES 内での協議結果を待つ。（DPSSES の PM は次回参加）	

2) アクションプラン（検査所チーム）とその対応案

C/P 機関	アクションプラン	プロジェクトの残り期間での対応可能性	期間延長などでの対応が望ましいもの/それ以外のもの
経済商務省 CSM	キルギスと日本での試験所間比較試験	比較試験を受け入れてくれるラボを探すことが必要	技能試験への参加支援の依頼もあるが、資金支援は困難。
	食品の同定技術	既存機材と試薬で対応可能なものは個別に支援可能	具体的な分析項目が必要
	食品の同定における妥当性確認の研修	LC-MS/MS などを使用した分析方法の妥当性確認は指導予定。	
農業省 獣医衛生検査院	新たな分析方法導入のための資金の決定	（キルギス側の問題）	技術規則の分析項目範囲拡大への対応は要検討。
	分析方法導入のための人材育成計画	プロジェクトの成果１でもある。	
	導入した分析方法の妥当性確認と認定に向けた手順	今後指導予定で、分析フロー作成を依頼し､SOP サンプルも提供済。	
保健省 疾病予防衛生疫学監督部	新規導入機材（LC-MS/MS）による食品中の抗生物質、マイコトキシン、残留農薬分析のための最新方法の導入と開発	今後指導予定で、分析フロー作成を依頼し､SOP サンプルも提供済。	技術規則の分析項目範囲拡大への対応は要検討。
	分析方法の妥当性確認/検証	今後指導予定で、分析フロー作成を依頼し､SOP サンプルも提供済。	
	試験所間比較試験への参加	比較試験を受け入れてくれるラボを探すことが必要	

5-2　各機関の３カ年人材開発育成計画

PDM における成果１の指標の一つでもある「部門毎の３カ年人材開発育成計画」でも、C/P から提出された計画の概要を述べたが（「第３章プロジェクトの達成度 3-1-1 成果１3）３カ年人材開発育成計画」参照)、ここでは各機関から提出された計画案の詳細を示す。

表 5-2 各機関の３カ年人材開発育成計画

(1) 検査所チーム

a. CVDE Laboratory Staff Training plan

№	Name of the topic	Trainer/place of training	Trainee name	Date
	ELISA			
1	Determination of antibiotics by enzyme immunoassay with chemiluminescent detection using biochip technology in meat, honey and milk	Training centers of the EAEU and EU countries (according to the proposed plan)	E. Shambetova A. Kasymalieva	Year 2024-2026
2	Validation/verification of methods. Shewhart Control Charts. Calculation of uncertainty. Quality management system in testing laboratories	Center for advanced training BCSM Bishkek	E. Turenko R. Toimbetov E. Shambetova A. Kasymalieva B. Zhumabek kyzy G. Musaeva	Year 2024-2026
	HPLC and HPLC-MS			
3	“Determination of residual content of sulfonamides, nitroimidazoles, penicillins, amphenicols using high-performance liquid chromatography with a mass spectrometric detector in food products” 16 hours	Training centers of the EAEU and EU countries (according to the proposed plan)	E. Turenko B. Ibraimakunova	Year 2024-2026 Upon receipt of applications. In the form of individual training.
4	“Determination of the residual content of tetracyclines in livestock products using high-performance liquid chromatography with a mass spectrometric detector" 16 hours	Training centers of the EAEU and EU countries (according to the proposed plan)	E. Turenko B. Ibraimakunova	
5	“Determination of residual amounts of aminoglycosides of animal origin by high-performance liquid chromatography with a mass spectrometric detector” 16 ac. hours	Training centers of the EAEU and EU countries (according to the proposed plan)	E. Turenko B. Ibraimakunova	
6	"Practical aspects of chromatography, gas chromatography-mass spectrometry"	Training centers of the EAEU and EU countries (according to the proposed plan)	E. Turenko B. Ibraimakunova	Year 2024-2026
	GC, GC-MS			
7	Training and advanced training of specialists in chromatography GC, HPLC, mass spectrometry	Training centers of the EAEU and EU countries (according to the proposed plan)	G. Musaeva B.Jumabek kyzy	Year 2024-2026 and based on applications
8	Practical aspects of chromatography, chromatospectrometry	Training centers of the EAEU and EU countries (according to the proposed plan)	G. Musaeva B.Jumabek kyzy	
9	Practical aspects of the application of HPLC and GC methods using the example of determination of antibiotics, pesticides, trans isomers of fatty acids	Training centers of the EAEU and EU countries (according to the proposed plan)	G. Musaeva B.Jumabek kyzy	
10	Determination of pesticides and antibacterial residues in food products using HPLC MS/MS and GC methods	Training centers of the EAEU and EU countries (according to the proposed plan)	G. Musaeva B.Jumabek kyzy	
11	Practical aspects of the application of HPLC and GC methods using the example of determination of antibiotics, pesticides, trans isomers of fatty acids in food products	Training centers of the EAEU and EU countries (according to the proposed plan)	G. Musaeva B.Jumabek kyzy	
12	Practical use of the AAS method for the determination of metals in feed, products,	Training centers of the EAEU and EU countries (according	R. Toimbetov G. Musaeva	

	environmental objects (with practical exercises at workplaces in the laboratory)	to the proposed plan)		
	Atomic Absorption Spectroscopy			
13	Practical use of the AAS method for the determination of metals in feed, products, environmental objects (with practical exercises at workplaces in the laboratory)	Training centers of the EAEU and EU countries (according to the proposed plan)	R. Toimbetov G. Musaeva	Year 2024-2026
	Microbiology and VS			
14	Sampling of food products of animal and plant origin, feed, feed additives for the purpose of laboratory quality and safety control (“Sampling”)	Training centers of the EAEU and EU countries (according to the proposed plan)	O. Savelieva A. Seidalieva	Year 2024-2026
15	Veterinary and sanitary examination with the basics of technology and standardization of livestock products	Training centers of the EAEU and EU countries (according to the proposed plan	O. Savelieva A. Seidalieva	
16	Veterinary and sanitary examination of livestock products	Training centers of the EAEU and EU countries (according to the proposed plan	O. Savelieva A. Seidalieva	
17	Physico-chemical methods for honey research	Training centers of the EAEU and EU countries (according to the proposed plan	O. Savelieva A. Seidalieva	
18	Methods of microbiological control of food products. Validation and verification of microbiological research methods.	Training centers of the EAEU and EU countries (according to the proposed plan	T. Abylkasymova A. Kasymalieva	

b. DPSSES Laboratory Staff Training plan

No	Training topic		Implementation deadlines		
			2024	2025	2026
1	Instrumental analysis (GC, HPLC, HPLC/MS /MS, AAS, ICP-MS)	Application of high-performance liquid chromatography and tandem mass spectrometry (HPLC/MS/MS) and high-performance liquid chromatography (HPLC) methods for determining residual amounts of antibiotics (sulfonamides, tetracycline, furacilin, etc.) in food products	IV quarter	III quarter	II quarter
2		Application of high performance liquid chromatography (HPLC) method for determination of vitamins (tocopherol (E), calciferol (D), vitamin K, thiamine (B1), niacin (PP), folic acid (Bc), ascorbic acid (C), etc.) in food products		II quarter	III quarter
3		Application of the high-performance liquid chromatography (HPLC) method for the determination of mycotoxins (fumonisins B1 and B2, T-2 toxin, deoxynivalenol , etc.) in food products		IV quarter	III quarter
4		Determination of mineral substances by the atomic emission method (sodium, potassium, calcium, magnesium and manganese) in food products			IV quarter
5		Determination of mineral substances by atomic absorption spectrometry with atomization in an air flame, acetylene (sodium, potassium, calcium, magnesium, selenium, etc.) in food products		IV quarter	
6		Determination of toxic elements by atomic absorption spectrometry (chromium, nickel and iron) in food products	IV quarter		
7	Increasing laboratory capacity for food safety	Conducting tests for compliance with the requirements of technical regulations of the EAEU and expanding the scope of accreditation	during a year		
8		Improvement of the quality management system in laboratories in accordance with the current international standard ISO/IEC 17025	during a year		
9		Training of laboratory specialists in method validation /verification	during a year		
10		Estimation of measurement uncertainty	during a year		
11		Participation in a proficiency testing program with leading food safety providers	during a year		
12		Training in modern laboratory testing methods and food safety training	during a year		
13		Develop and approve standard operating procedures (SOPs)	during a year		

c. CSM Laboratory Staff Training Plan

No.	Test methods introduced	Equipment	Necessary activities that must be periodically repeated according to the plan annually	Implementation period
1	Milk and dairy products. Detection of vegetable oils and fats. GOST 33490-2015	Gas chromatograph Trace 1310 GC with mass spectrometric detector ISQ 7000	Test Method Validation Conducting proficiency test at the international level Additional training	2024
2	Vegetable oils, animal fats and products of its processing. Methods for determining the mass fraction of trans isomers of fatty acids GOST 31754-2012		Test Method Validation Conducting proficiency test at the international level Additional training	2024
3	Milk and dairy products. Determination of the content of preservatives and dyes using high-performance liquid chromatography GOST 31504-2012	Ultimate 3000 High Performance Liquid Chromatograph (HPLC) UV detector or UV detector with diode array Fluorescence detector	Purchase of reference materials for pesticides and solvents Additional training	2024
4	Meat and meat products. Method for determining the amino acid composition of animal protein GOST 34132-2017	HPLC Amino Acid Analyzer S433	Purchase of reference materials for pesticides and solvents Training in advanced laboratories of the EAEU	2025
5	Vegetable oils and animal fats. Determination by gas chromatography of the mass fraction of methyl esters of fatty acids Vegetable oils. Method for determining fatty acid composition GOST 30418-96		Purchase of reference materials for pesticides and solvents Training in advanced laboratories of the EAEU	2025
6	GMOs in food GOSTR 58958— 202	Real Time Rotor-Gene Q	Conducting proficiency test at the international level Additional training	2026
8	Vodka, ethyl alcohol from food raw materials. Gas chromatographic express method for determining the content of toxic microimpurities GOST 33833-2016 Alcoholic drinks. Gas chromatographic method for determining the volume fraction of methyl alcohol GOST 31663-2012	Gas chromatograph Trace 1310 GC flame ionization detector	Purchase of reference materials for pesticides and solvents Training in advanced laboratories of the EAEU Invite technical experts to the laboratory	2025
10	Milk and dairy products determination of more than 70 types of antibiotics	Chromato Mass Spectrometry Tandem HPLC and Mass Spectrometry	Purchase of reference materials for antibiotics, solvents. Invite technical experts to the laboratory	2024
eleven	Maintenance of high-tech types of equipment Gas chromatographs, spectrometers, high-performance liquid chromatographs, atomic emission spectrometers, etc.	Service - experts from Almaty, Moscow and Novosibirsk.	2026	

(2) HACCP 監査チーム

a. DPSSES inspector training plan

Plan of the training for the specialists from territorial Centers for Disease Prevention and State Sanitary and Epidemiological Surveillance for the inspection of enterprises producing and processing milk and dairy products, as well as manufacturers engaged in the production and processing of food products, including milk and dairy products for the implementation of the HACCP system

No	Topic name	Regions	Participants	Number of trainees	Duration	Date	Source of financing
	Basic level						
1.	Introduction. Food safety system based on HACCP principles in food industry enterprises: - Legislation of the Kyrgyz Republic. Technical regulations of the CU/EAEU - Risk analysis and hazards	Bishkek and all regions	Inspectors from DPSSES	25-30 from each region	3 days each	2024 3-4 quarter 2025 2-3 quarter	Donor funds
2.	-Fundamentals of food microbiology - Prerequisite programs - HACCP preparatory steps - HACCP principles	Bishkek and all regions	Dairy producers	15-20 from each region	3 days each	2024 3-4 quarter 2025 2-3 quarter	Donor funds
	Advanced level						
1.	Implementation of the HACCP food safety management system in food industry enterprises: - Prerequisite programs - HACCP preparatory steps - HACCP principles	Bishkek and all regions	Dairy producers	10-15 in each area	3 days each	2025 3-4 quarter 2026 2-3 quarter	Donor funds
2.	HACCP food safety management system in food industry enterprises - Legal basis for conducting HACCP inspections within the framework of state control and supervision -Fundamentals of food microbiology - Prerequisite programs - HACCP preparatory steps - HACCP principles	Bishkek and all regions	Inspectors from DPSSES	15-20 in each area	3 days each	2025 3-4 quarter 2026 2-3 quarter	Donor funds
3.	Inspection of the production of milk and dairy products for compliance with HACCP principles and sanitary and hygienic requirements: -Implementation of inspection guidelines - Review of HACCP principles and use of checklists - Food sampling	Bishkek and all regions	Inspectors from DPSSES	25-30 in each area	2 days each	2025 3-4 quarter 2026 3-4 quarter	Donor funds

b. VS inspector training plan

VS PLAN for Training of regional veterinary inspectors of the Veterinary Service of the Ministry of Agriculture of the Kyrgyz Republic, According to HACCP inspection at farms, milk collection points and food enterprises, on the veterinary and sanitary requirements, 2024-2025-2026

Topics for the training plan:	1. Theoretical seminars and trainings on HACCP inspection, in accordance with the veterinary and sanitary requirements of the EAEU, national legislation and the Codex Alimentarius: Presentations on legal acts; PRP; HACCP 7 principles and 12 procedures, and CCP, Stages of HACCP inspection at a farm, milk collection point, food enterprise 2. Practical training seminar on HACCP inspection using the example of One farm, milk collection point and food enterprise

	3. Familiarization with the HACCP Manual, Checklists for the farm, milk collection point and food enterprise 4. Work with documents for HACCP inspection of a farm, milk collection point and food enterprise, in accordance with veterinary and sanitary requirements
Period:	2024: Training seminars throughout the year 2025: Providing advisory and methodological assistance, explanatory work on the inspection of farms/milk collection points/food enterprises, in accordance with the veterinary requirements of the EAEU, national legislation and the Codex Alimentarius using Checklists and preparation of documentation for HACCP inspection 2026: Results of inspection and implementation of HACCP at a farm, milk collection point and food enterprise with the attachment of reports, photographs and documentation on HACCP
Participants	1. State Veterinary inspectors 2. Private Veterinarians 3. Farmers 4. Milk collection points 5.Dairy processing plants
Trainers	1. JICA Project 2. WHO project 3. FAO project 4. Center for advanced training CSM, MoEC KR 5. VS Trainers
Regions	VS Bishkek Department, Chui, Talas, Issyk-Kul, Naryn, Osh, Jalal Abad, Batken

5-3　フォローアップ活動への要請と提言

JICAがプロジェクト実施後に関連する活動についてフォローアップのスキームがあることから、C/Pがその実施のために提案をしたとの情報を得ており、参考までに以下に示す。

表 5-3　フォローアップ活動へのC/Pからの提案

No.	活動内容	想定する予算
1	CSM, CVDE, DPSSESの各検査所における国際規格に準拠したハチミツ試験法の研修と実施 －　専門家による技術者研修（ラトビア等） －　ハチミツ分析の実施 －　試験所間比較 －　検査所職員養成のための大学向けプログラム作成	77 thousand US dollars
2	獣医衛生検査院作成のHACCP監査員向けテキストの印刷と研修 対象：キルギス農業大学獣医学部学生、農家、集乳場、食品加工工場の民間獣医師、乳・乳製品の加工業者 地方獣医師によるHACCP監査業務への実施支援	5 thousand dollars.
3	HACCP監査の研修実施（食品工場、監査員、その他関係者） （セミナーなど）	3 thousand dollars.
4	DPSSESが開発したHACCP検査マニュアルの印刷と研修 － 学生のトレーニング － 地方衛生検査官によるHACCP検査業務への応用 － 牛乳・乳製品の加工業者。	5 thousand dollars.

5-4　地方における乳製品バリューチェーンの食品安全改善プロジェクト（プロジェクトからの提言）

前述したようにC/Pは、プロジェクト実施後に監査業務の改善により地方における乳製品の衛生管理の強化を目指している。今後の食品安全プロジェクト案として、それらの実現を支援するために必要な要求事項を整理し、支援の方向性と留意すべきポイントを提言した。

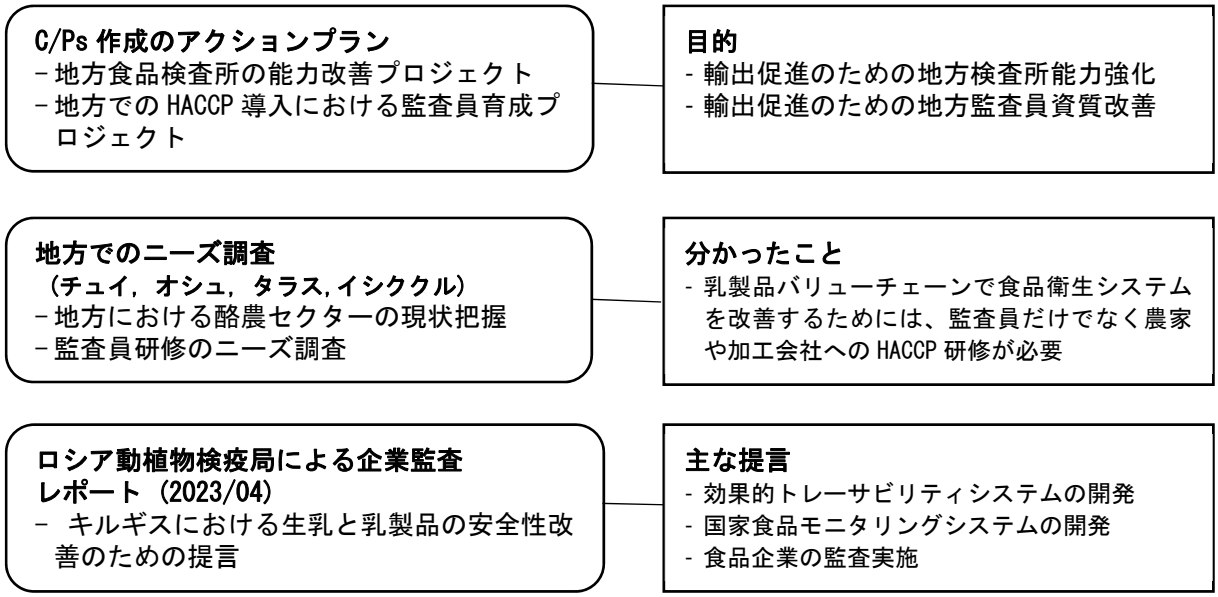


図 5-1 地方における乳製品バリューチェーン食品安全プロジェクトの検討

キルギスの乳製品など食品の輸出促進のために中央の検査所だけでなく地方の検査所の能力強化や監査員の資質改善が必要であり、地方はビシュケクなど首都圏と比較して食品衛生に関する研修や支援が少ないこともあり、地方展開に当たっては行政機関だけでなく農家や加工企業など民間への研修も必要である。また、ロシア動植物検疫局のレポートによると酪農セクターにおける基本的な衛生管理システムの改善が必要なことが指摘されている。

プロジェクトから今後の支援の方向性として以下を提言する。

1. 地方のバリューチェーンにおける食品衛生の改善のために必要な項目の調査
2. 支援のターゲット地域と対象とするバリューチェーンの選定
3. 上記の調査で特定された項目についての情報収集
4. 個々の項目についての課題の理解と対応策の検討
5. HACCP に基づく監査研修による改善の準備（HACCP 監査強化の場合）
6. 監査員による研修の実施促進(HACCP 監査強化の場合)

特に留意するポイント

a. 乳製品バリューチェーンにおいて、農家や集乳業者における生乳の衛生管理が重要であるに

も関わらず、抗生物質の使用管理や搾乳後の温度管理などそれらのトレーサビリティを含めて十分な管理ができていないことへの対策が重要と思われる。

b. 支援のターゲット地域と対象を検討する際に、乳牛の飼養管理から搾乳、生乳の保管・輸送、乳製品製造工場での受入と加工、製造段階の HACCP 管理、市場流通に至るまでの地域のバリューチェーン全体で食品安全が確保できる仕組みづくりを検討する。

c. 地方の生乳や乳製品の生産量が増加して販売の拡大につなげるためには、輸出先なども含めて市場の要求などの情報収集を行い、対応策の検討も必要である。

添付資料

Project Design Matrix (PDM) Version 6.0 **Nov.30, 2022**

Project Title: Project on Improvement of Human Resources in Food Laboratories for Improvement of Quality of Milk and Dairy Products
Project Period: From April 19, 2019 to December 31,2023
Implementing Agencies: (1) Ministry of Economy and Commerce (MOEC), (2) Center for Standardization and Metrology, Ministry of Economy and Commerce (CSM), (3) Ministry of Health (MOH) (4) Department of Disease Prevention and State Sanitary Epidemiological Surveillance (DPSSES), (5) Veterinary Service, Ministry of Agriculture (VS), (6) Center for Veterinary Diagnosis and Examination, Veterinary Service, Ministry of Agriculture (CVDE)
Project Areas: Bishkek and Chui region, Issyk-kul region, Osh region
Direct Target Groups: Staff "food testing and food factory inspection" of CSM, DPSSES, CVDE, and their Regional Food Testing Centers (RFTCs)
Indirect Target Groups: (1) Kyrgyz National Technical University, (2) Kyrgyz Center for Accreditation (KCA), (3) Private milk processing companies, (4) General customers

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal			
Export of dairy products produced in the Kyrgyz Republic to the Eurasian Economic Union (EAEU) countries is increased by securing quality and safety of dairy products.	1. Export amount of dairy products produced in the Kyrgyz Republic to the EAEU countries will increase more than 30% within three (3) years after completion of the Project. 2. The number of ISO22000 (FSSC22000) or equivalent management system certified dairy factories increase 10%.	1. Record of food testing and food factory inspection 2. Statistics of private companies who implement food safety management system	
Project Purpose			
The system*1 to assess the conformity for quality and safety of dairy products through the value chain is developed in accordance with EAEU technical regulations	1 Number of reliable methods with validation/verification during project period through the project activities increases 10%. 2 Number of management documents necessary to improve laboratory management increases through the project activities. 3 Check sheet for factory inspection including HACCP contents is developed and approved by Ministry of Economy and Commerce.	1. Result of Base-line and End-line survey 2. Monitoring result of quality control 3. Development and approval status of HACCP check sheet by Ministry of Economy and Commerce	1. Kyrgyz national food safety policy for milk and dairy products does not change drastically.

Outputs			
1. Implementing agencies discuss and agree the detailed Project activities and implementation structure.	1. The agreement among counterparts is concluded, including following contents; - The collaboration among all C/Ps in the Project activities - 3-years training plan and program for human resource development will be prepared by 3 agencies and approved by the head of the respective agencies.	1. Result of Base-line and End-line survey	1. Kyrgyz national policy on milk and dairy products of Kyrgyz does not change drastically 2. There is no delay of Project progress such as installation of testing equipment
2. The system to assess the conformity for safety of raw milk and manufacturing process by CVDE, VS and its RFTCs from the viewpoints of technology and human resource is developed.	1. More than 50% of them obtain satisfactory level of skills as a competent technician. 2. Laboratory management is improved to update the new version of ISO/IEC17025. 3. HACCP inspection training program is developed, and improved through the training in the factory, and approved by the head of VS. 4. The trial food factory inspection is designed and executed. 5. TOT program is designed and executed.	1.1 Result of base-line and end-line survey 1.2 Comprehension test developed by the project 1.3 Record of training 1.4 Performance record of qualified laboratory technician 2. Record of laboratory accreditation 3. Manual of HACCP inspection training program 4. Plan and record of the trial food factory inspection	
3. The system to assess the conformity for safety of milk, dairy products and manufacturing process by DPSSES and its RFTCs from the viewpoints of technology and human resource is developed.	1. More than 60% of them obtain satisfactory level of skills as a competent technician 2. Laboratory management is improved to update the new version of ISO/IEC17025. 3. HACCP inspection training program is developed, and improved through the training in the factory, and approved by the head of DPSSES. 4. The trial food factory inspection is designed and executed. 5. TOT program is designed and executed.	1.1 Result of base-line and end-line survey 1.2 Qualification exam developed by the project 1.3 Record of training 1.4 Performance record of qualified laboratory technician 2. Record of laboratory accreditation 3. Manual of HACCP inspection training program 4. Plan and record of the trial food factory inspection	

4. The system to assess the conformity for quality of milk, dairy products by CSM and its RFTCs from the viewpoints of technology and human resource is developed.	1. More than 70% of them obtain satisfactory level of skills as a competent technician 2. Laboratory management is improved to update the new version of ISO/IEC17025.	1.1 Result of base-line and end-line survey 1.2 Qualification exam developed by the project 1.3 Record of training 1.4 Performance record of qualified laboratory technician 2. Record of laboratory accreditation	

Activities	Inputs		Important Assumptions
	Japanese Side	Kyrgyz side	
Activity 1: 1.0. To conduct Baseline Survey (first six months after the commencement of the Project) and End-Line Survey (last three months before the end of the Project) for obtaining necessary information of planning and evaluation of the Project 1.1. To establish Working Group (WG) by KIA [1], in order to discuss and agree the roles of KIA, priorities of food testing items to be strengthened, training program of food testing staff and food factory inspectors and so on 1.2. To assess the development status of food safety regulation system from the view point of EAEU conformity, to discuss implementation gap by WG. 1.3. To summarize practical guidance for food testing and food factory inspection Activity 2 (for CVDE and VS): HACCP training for veterinary hygiene inspector 2.1. To develop the training program of	1. Dispatch of Japanese and the third countries experts (1) Operation Advisor (2) Food safety management system / HACCP and lab testing training design / Business Management (3) Coordinator (4) HACCP introduction (5) Internal quality Control (6) Testing techniques for food analysis (Chemical and Microbiological testing, others) (7) Others (Business Management, Market Research (8) The third counties expert (Russia, Belarus, Kazakhstan and so on) 2. Trainings in Japan 3. Provision of equipment and consumable for target testing items and internal quality control system, excluding equipment which was provided by other donors	1. Assignment of counterpart personnel from implementing agencies (1) Chairman of Joint Coordinating Committee (JCC) (2) Project Director (3) Vice Project Director (4) Vice Project Director (5) Project Manager for Output 1 (6) Project Manager for Output 2 (7) Project Manager for Output 3 (8) Project Manager for Output 4 (9) Counterpart personnel for the Project activities 2. Expense for the counterpart personnel activities (travel cost, allowance and accommodation fee, etc.) 3. Provision of consumable for testing activities 4. Provision of office space and facilities for the JICA experts (including electricity, water, internet access, etc)	1. Kyrgyz national policy of milk and dairy products of Kyrgyz does not change drastically. 2. Serious security issue does not occur. 3. Counterparts do not exchange frequently.

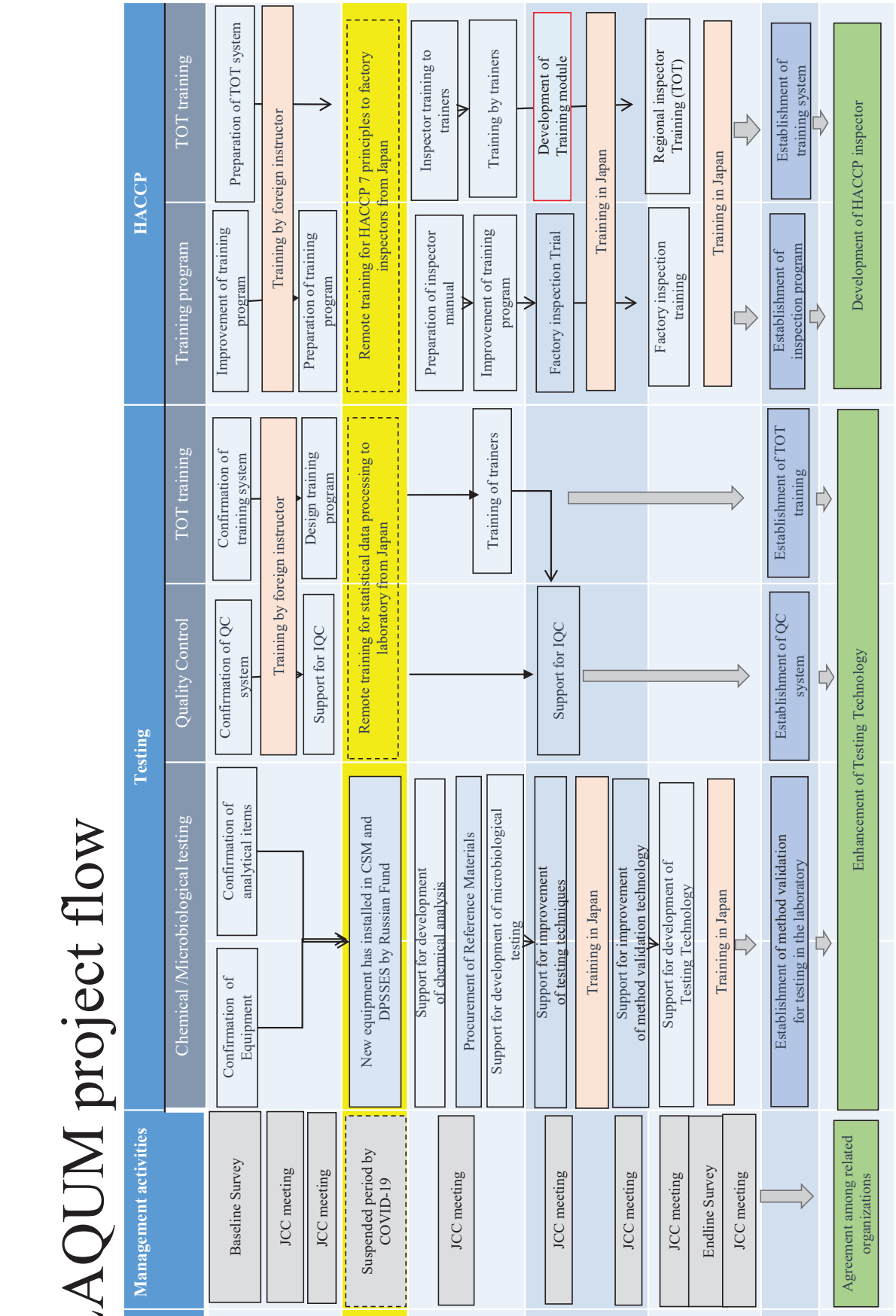
[1] Kyrgyz Inspection Agencies (KIA): Kyrgyz official inspection center such as CSM, DPSSES, CVDE and RIAs.

food factory inspection based on HACCP principle 2.2. To develop the Training of Trainer (ToT) program for food factory inspection 2.3. To conduct training of Trainer (TOT) 2.4. To try food factory inspection based on HACCP principle 2.5. To establish food factory inspector training system with TOT program <u>Laboratory staff capacity building and its reliability</u> 2.6. To improve the Internal Quality Control 2.7. To develop and conduct testing technology which fit for purpose 2.8. To develop and conduct testing technology with verified or validated method 2.9. To improve technical ability and utilization of uncertainty assessment 2.10. To develop laboratory staff training program with TOT system <u>Activity 3 (for DPSSES):</u> <u>HACCP training for food sanitation inspector</u> 3.1. To develop the training program of food factory inspection based on HACCP principle 3.2. To develop the Training of Trainer (ToT) program for food factory inspection 3.3. To conduct Training of Trainer (TOT) 3.4. To try food factory inspection based on HACCP principle 3.5. To establish food factory inspector training system with TOT program			**Pre-conditions** 1. Current Kyrgyz national policies and strategies for agricultural sector do not change. 2. Adequate project counterparts are assigned.

<u>HACCP introduction program for food factory</u> 3.6. To develop the stepwise training system from improvement of HACCP introduction to food safety certification 3.7. To establish Food Safety Management System (FSMS) <u>Laboratory staff capacity building and its reliability</u> 3.8.To improve the Internal Quality Control 3.9. To develop and conduct testing technology which fit for purpose 3.10. To develop and conduct testing technology with verified or validated method 3.11. To improve technical ability and utilization of uncertainty assessment 3.12.To develop laboratory staff training program with TOT system <u>Activity 4 (for CSM)</u>: <u>Laboratory staff capacity building and its reliability</u> 5.1.To improve the Internal Quality Control 5.2.To develop and conduct testing technology which fit for purpose 5.3 To develop and conduct testing technology with verified and validated method 4.4.To improve technical ability and utilization of uncertainty assessment 4.5.To develop laboratory staff training program with TOT system			

*1 The scope of system covers laboratory testing and food factory inspection based on HACCP principle.
*2: Training for RFTCs is conducted through ToT system

2. 業務フローチャート


FLAQUM project flow
Month/Year
Management activities
Testing
Chemical /Microbiological testing
Quality Control
TOT training
HACCP
Training program
TOT training
Phase 1
Phase 2
4/2019~3/2020
4/2020~3/2021
4/2021~2/2022
2/2022~3/2023
4/2023~12/2023
Baseline Survey
JCC meeting
JCC meeting
Suspended period by COVID-19
JCC meeting
JCC meeting
JCC meeting
JCC meeting
Endline Survey
JCC meeting
Agrement among related organizations
Confirmation of Equipment
Confirmation of analytical items
New equipment has installed in CSM and DPSSES by Russian Fund
Support for development of chemical analysis
Procurement of Reference Materials
Support for development of microbiological testing
Support for improvement of testing techniques
Training in Japan
Support for improvement of method validation technology
Support for development of Testing Technology
Training in Japan
Establishment of method validation for testing in the laboratory
Enhancement of Testing Technology
Confirmation of QC system
Training by foreign instructor
Support for IQC
Remote training for statistical data processing to laboratory from Japan
Training of trainers
Support for IQC
Establishment of QC system
Confirmation of training system
Design training program
Training of trainers
Establishment of TOT training
Improvement of training program
Training by foreign instructor
Preparation of training program
Remote training for HACCP 7 principles to factory inspectors from Japan
Preparation of inspector manual
Improvement of training program
Factory inspection Trial
Training in Japan
Factory inspection training
Training in Japan
Establishment of inspection program
Preparation of TOT system
Inspector training to trainers
Training by trainers
Development of Training module
Regional inspector Training (TOT)
Establishment of training system
Development of HACCP inspector

Tentative Plan of Operation (PO)(ver 8.0)

as of 29 November 2023

Project Title: Project on Improvement of Human Resources in Food Laboratories for Improvement of Quality of Milk and Dairy Products.

Inputs	Plan/Actual	2019 I	2019 II	2019 III	2019 IV	2020 I	2020 II	2020 III	2020 IV	2021 I	2021 II	2021 III	2021 IV	2022 I	2022 II	2022 III	2022 IV	2023 I	2023 II	2023 III	2023 IV	Responsible Organization: Japan	Responsible Organization: GOK	Monitoring	
Expert																									
Chief Advisor / Laws and regulations / Stakeholders coordination / Training supervision	Plan																					✔			
	Actual																								
Operation Advisor	Plan																					✔			
	Actual																								
Food safety management system / HACCP and lab testing training design / Business management	Plan																					✔			
	Actual																								
Coordinator	Plan																					✔			
	Actual																								
HACCP introduction	Plan																					✔			
	Actual																								
Internal quality Control	Plan																					✔			
	Actual																								
Testing techniques for food analysis (Chemical analysis, Microbiological testing, others)	Plan																					✔			
	Actual																								
Others (Market Research)	Plan																					✔			
	Actual																								
The third counties expert (Russia, Belarus, Kazakhstan and so on)	Plan																					✔			
	Actual																								
Equipment																									
Provision of equipmnt and consumables for target testing items and internal quality control system, excluding equipment which was provided by other donors	Plan																					✔			
	Actual																								
Training																									
Training in Japan	Plan																					✔			
	Actual																								

Activities	Plan/Actual	2019 I	2019 II	2019 III	2019 IV	2020 I	2020 II	2020 III	2020 IV	2021 I	2021 II	2021 III	2021 IV	2022 I	2022 II	2022 III	2022 IV	2023 I	2023 II	2023 III	2023 IV	Responsible Organization: Japan	Responsible Organization: GOK	Achievements	Issue & Countermeasures
Output 1: Implementing agencies discuss and agree the detailed Project activities and implementation structure.																									
1.0. To conduct Baseline Survey (first six months after the commencement of the Project) and End-Line Survey (last three months before the end of the Project) for obtaining necessary information of planning and evaluation of the Project	Plan																					✔	✔	100% achieved	
	Actual																								
1.1. To establish Working Group (WG) by KIA , in order to discuss and agree the roles of KIA, priorities of food testing items to be strengthened, training program of food testing staff and food factory inspectors and so on	Plan																					✔	✔	100% achieved	
	Actual																								
1.2. To assess the development status of food safety regulation system from the view point of EAEU conformity, to discuss implementation gap by WG	Plan																					✔	✔	100% achieved	
	Actual																								
1.3. To summarize practical guidance for food testing and food factory inspection	Plan																					✔	✔	100% achieved	
	Actual																								

Output 2: The system to assess the conformity for safety of raw milk and manufacturing process by CVDE, VS and its RFTCs from the viewpoints of technology and human resource is strengthened developed.					
2.1. To develop and implement the training program of food factory inspection based on HACCP principle	Plan	✔	✔	100% achieved	
	Actual				
2.2. To develop Training of Trainer (TOT) program for food factory inspection	Plan	✔	✔	100% achieved	
	Actual				
2.3. To conduct training of trainer (TOT)	Plan	✔	✔	100% achieved	
	Actual				
2.4. To try food factory inspection based on HACCP principle	Plan	✔	✔	100% achieved	
	Actual				
2.5. To establish food factory inspector training system with TOT program	Plan	✔	✔	100% achieved	
	Actual				
2.6. To improve the Internal Quality Control	Plan	✔	✔	100% achieved	
	Actual				
2.7. To develop and conduct testing technology which fit for purpose	Plan	✔	✔	100% achieved	
	Actual				
2.8. To develop and conduct testing technology with verified or validated method	Plan	✔	✔	100% achieved	
	Actual				
2.9. To improve technical ability and utiilization of uncertainty assessment	Plan	✔	✔	100% achieved	
	Actual				
2.10. To develop laboratory staff training program with TOT system	Plan	✔	✔	100% achieved	
	Actual				
Output 3: The system to assess the conformity for safety of milk, dairy products and manufacturing process by DPSSES and its RFTCs from the viewpoints of technology and human resource is developed.					
3.1. To develop and implement the training program of food factory inspection based on HACCP principle	Plan	✔	✔	100% achieved	
	Actual				
3.2. To develop the Training of Trainer (TOT) program for food factory inspection	Plan	✔	✔	100% achieved	
	Actual				
3.3. To conduct training of Trainer (TOT)	Plan	✔	✔	100% achieved	
	Actual				
3.4. To try food factory inspection based on HACCP principle	Plan	✔	✔	100% achieved	
	Actual				
3.5. To establish food factory inspector training system with TOT program	Plan	✔	✔	100% achieved	
	Actual				
3.6. To develop the stepwise training system from improvement of HACCP introduction to food safety certification	Plan	✔	✔	100% achieved	
	Actual				
3.7. To establish Food Safety Management System (FSMS)	Plan	✔	✔	100% achieved	
	Actual				
3.8. To improve the Internal Quality Control	Plan	✔	✔	100% achieved	
	Actual				
3.9. To develop and conduct testing technology which fit for purpose	Plan	✔	✔	100% achieved	
	Actual				
3.10. To develop and conduct testing technology with verified or validated method	Plan	✔	✔	100% achieved	
	Actual				
3.11. To improve technical ability and utilization of uncertainty assessment	Plan	✔	✔	100% achieved	
	Actual				
3.12. To develop laboratory staff training program with TOT system	Plan	✔	✔	100% achieved	
	Actual				

Output 4: The system to assess the conformity for quality of milk, dairy products by CSM and its RFTCs from the viewpoints of technology and human resource is developed.					
4.1. To improve the Internal Quality Control	Plan / Actual	✔	✔	100% achieved	
4.2. To develop and conduct testing technology which fit for purpose	Plan / Actual	✔	✔	100% achieved	
4.3. To develop and conduct testing technology with verified or validated method	Plan / Actual	✔	✔	100% achieved	
4.4. To improve technical ability and utilization of uncertainty assessment	Plan / Actual	✔	✔	100% achieved	
4.5. To develop laboratory staff training program with TOT system	Plan / Actual	✔	✔	100% achieved	
Duration / Phasing	Plan / Actual				

Monitoring Plan		2019 I	2019 II	2019 III	2019 IV	2020 I	2020 II	2020 III	2020 IV	2021 I	2021 II	2021 III	2021 IV	2022 I	2022 II	2022 III	2022 IV	2023 I	2023 II	2023 III	2023 IV	Remarks	Issue	Solution
Monitoring																								
Joint Coordinating Committee	Plan																							
	Actual																							
Set-up the Detailed Plan of Operation	Plan																							
	Actual																							
Submission of Monitoring Sheet	Plan																							
	Actual																							
Reports/Documents																								
Project Completion Report	Plan																							
	Actual																							
Activity Progress Report	Plan																							
	Actual																							
Public Relations																								
Project News Letter in JICA web site	Plan																							
	Actual																							
	Plan																							
	Actual																							

4. 専門家の現地及び国内業務の実績（第2期）

専門家の現地及び国内業務実績（第1期）

専門家の現地及び国内業務実績（第2期）

■ 専門家の現地業務　□ 専門家の国内業務　▒ 専門家の再渡航が出来ない期間　[- - -] 遠隔研修の期間

5. タスクチームメンバーリスト（2023年11月30日現在）

FLAQUM Project Task Team members (Lab team) 2023/11/30

Chemical and Toxicological Testing Laboratory — CVDE (VS)

No.	Name Position	Responsibility	Experience	Professional Background
1	**Mr. Kurmankulov Ermek** Head of laboratory			
2	**Ms. Turenko Elena** Engineer physicist	Quality and safety indicators, animal origin raw material	More than 10 years	Chemistry, 3 Years, HPLC, LC-MS/MS
3	**Ms. Duishobekova Aizada** Chemist	Quality and safety indicators, animal origin raw material		atomic absorption
4	**Mr. Rasul Toimbetov** Chemist	Quality and safety indicators, animal origin raw material		atomic absorption
5	**Ms. Ibraimankulova Begimai** Chemist	Quality and safety indicators, animal origin raw material	1 to 3 years	chemical technology, 2 years, HPLC
6	**Ms. Chokmorova Erkingul** Chemist	Quality and safety indicators, animal origin raw material	More than 10 years	Biology and chemistry, 12 years, ELISA
7	**Ms. Bakashova Gulzhamal** Chemist	Quality and safety indicators, animal origin raw material	3 to 5 years	chemical technology, 4 years, GC/MS
8	**Ms. Djumabek Kyzy Begaim**	Quality and safety indicators, animal origin raw material		
9	**Ms. Shambetova Elzat**	Quality and safety indicators, animal origin raw material		
10	**Ms. Abylkasymova Taalaikul**	microbiological indicators	more than 5 years	microbiology (New comer)
11	**Ms. Kasymalieva Aygul**	microbiological indicators	more than 5 years	microbiology (New comer)

FLAQUM Project Task Team members (Lab team) 2023/11/30

Center for Labortory Testing DPSSES (MOH)

No.	Name Position	Responsibility	Experience	Professional background
1	**Ms. Djumakanova Aygul** Center for Laboratory Testing, Head			
2	**Ms. Akimbaeva Gulbarchyn** Specialist for sanitary and hygienic laboratory research	toxic elements, heavy metalls	18-19 years	atomic absorbtion, voltampermetr
3	**Ms. Boobekova Makhabat** Specialist for sanitary and hygienic laboratory research	chlorine organic pesticides	about 20 years	GC, voltampermetr
4	**Ms. Zhaparova Meerim** Specialist for sanitary and hygienic laboratory research	trace impurities in vodka, toxic elements	6 years	GC 2010+, 6 years
5	**Ms. Jolboldieva Gulkaiyr** Specialist for sanitary and hygienic laboratory research	trace impurities in vodka, toxic elements	10 years	GC
6	**Ms. Lymareva Natalia** Specialist for sanitary and hygienic laboratory research	Analytical paramaeters and equipment chlorine organic pesticides, antibiotics and sweeteners	5 to 10 years	GC, LC , hromatomass, ELISA
7	**Ms. Yrsalieva Azima** Specialist for sanitary and hygienic laboratory research	heavy metalls	7 years	absorbtion, voltampermetr
8	**Ms. Faizova Fluza** Specialist for sanitary and hygienic laboratory research	trace impurities in vodka, toxic elements	3 years	GC, 3 years
9	**Ms. Andekova Gulzat** Specialist for sanitary and hygienic laboratory research	Analytical paramaeters and equipment	6 years	LC-MS
10	**Ms. Tologonova Aisuluu** Specialist for sanitary and hygienic laboratory research	Analytical paramaeters and equipment	8 months	GC
11	**Ms.Asylbekova Nurzada** Specialist for sanitary and hygienic laboratory research	Analytical paramaeters and equipment	1 years	GC

FLAQUM Project Task Team members (Lab team) 2023/11/30

Testing Laboratory for Food and Agricultural Products CSM (MOEC)

No.	Name / Position	Responsibility	Experience	Professional background
1	**Ms. Aksupova Aygul** / Head of the testing laboratory	Pb, Cd, As, Pesticides, mycotoxins, microbiological	More than 10 years	
2	**Ms. Alseitova Anar** / Leading Engineer	Pesticides, mycotoxins	More than 10 years	Process Engineer
3	**Ms. Kachkanakova Satynbu** / Engineer of 1 category	Toxic elements	More than 10 years	Process Engineer
4	**Ms. Tursunova Elmira** / Engineer of 1 category	Physical and chemical indicators	5 to 10 years	Process Engineer
5	**Ms. Sopieva Salika** / Engineer of 1 category	GMO, microbiology	5 to 10 years	Biochemist
6	**Ms. Shumikhina Ekaterina** / Leading Engineer	Microbiological indicator	More than 10 years	Sanitation and hygiene
7	**Ms. Bakashova Aruuke** / Engineer of 2 category	Physical and chemical indicators	1 to 3 years	Chemist-technologist (New comer)
8	**Ms. Esenalieva Meerim** / Engineer of 2 category	Toxic elements	Less than 1 year	Engineer-technologist (New comer)
9	**Ms. Raimjanova Roksana** / Engineer of 2 category	GMO, microbiology	Less than 1 year	Engineer -technologist (New comer)
10	**Mr. Aberaimov Anvar**	Pb, Cd, As, Pesticides, mycotoxins		(New comer)

FLAQUM Project Task Team members (HACCP Team) 2023/11/30

Veterinary Survice under Ministry of Agriculture VS (MOA)

No.	Name Position	Experience	Working area	Academic background
1	**Ms. Iskembaeva Gulmayram (Mira)** DFSSVS, Chief	More than 10 years	External veterinary supervision	Higher, Agrrarian Univ., Veterinary Faculty
2	**Ms. Kaldyralieva Eliza** Alamudun VPA, Senior inspector	1 to 3 years	Alamudun district	Higher, Agrrarian Univ.
3	**Mr. Sagynbek uulu Talantbek** Alamudun VPA, Inspector		Alamudun district	Higher, Agrrarian Univ.
4	**Ms. Zhukeeva Murzakul** Bishkek DVS, Chief	5 to 10 years	Bishkek city	Higher, Agrrarian Univ., Veterinary Faculty
5	**Ms. Abdyldaeva Asel** Bishkek City, Inspector	1 to 3 years	Bishkek city	Higher, Agrrarian Univ., Veterinary Faculty
6	**Ms. Sakeshova Zhyldyz** Bishkek City, Inspector	Less than 1 year	Bishkek city	Higher, Agrrarian Univ., Veterinary Faculty
7	**Mr. Dzhuzumaliev Timur** Bishkek City, Inspector	3 to 5 years	Bishkek city	Higher, Agrrarian Univ.
8	**Mr. Abdymanap uulu Maripbay** Bishkek City, Inspector		Bishkek city	Higher, Agrrarian Univ.
9	**Mr. Samatbekov Bekulan** Bishkek City, Inspector		Bishkek city	Higher, Agrrarian Univ.

FLAQUM Project Task Team members (HACCP Team) 2023/11/30

Department of Disease Prevension Atate Sanitary and Epidemiology Survaillance DPSSES (MOH)

No.	Name Position	Experience	Working area	Academic background
1	**Ms. Arykbaeva Bubuzhan** DNDP SS, Head	More than 10 years	Central Department, Bishkek city	Higher, Medical Academy
2	**Mr. Imakeev Azamat** DNDP SS, Head		Central Department, Bishkek city	Higher, Medical Academy
3	**Ms. Abamuslimova Nazgul** DNDP SS, Sanitary doctor	More than 10 years	Central Department, Bishkek city	Higher, Medical Academy
4	**Ms. Sabyralieva Zhanyl** DNDP SS, Sanitary doctor	3 to 5 years	Central Department, Bishkek city	Higher, Medical Academy
5	**Ms. Moldobek Kyzy Altynai** DNDP SS, Sanitary doctor	1 to 3 years	Central Department, Bishkek city	Higher, Medical Academy
6	**Ms. Satybaldieva Umut** Bishkek Center, Sanitary doctor	More than 10 years	Bishkek city	Higher, Medical Academy
7	**Ms. Kozhogulova Gulnara** Bishkek Center, Sanitary doctor	3 to 5 years	Bishkek city	Higher, Medical Academy
8	**Ms. Bekieva Dilbar** Bishkek Center, Sanitary doctor		Central Department, Bishkek city	Higher, Medical Academy
9	**Ms. Imankulova Mayrambubu** Bishkek Center, Sanitary doctor		Bishkek city	Higher, Medical Academy
10	**Ms. Alimbekova Aida** DNDP SS, Sanitary doctor		Central Department, Bishkek city	Higher, Medical Academy

6. 合同調整委員会議事録等　(1) 4th JCC

MINUTES OF MEETING
ON THE 4TH JOINT COORDINATION COMMITTEE
FOR THE PROJECT ON IMPROVEMENT OF HUMAN RESOURCES
IN FOOD LABORATORIES FOR IMPROVEMENT OF QUALITY OF MILK
AND DAIRY PRODUCTS IN THE KYRGYZ REPUBLIC (FLAQUM)

The fourth Joint Coordination Committee (hereinafter referred to the "JCC") Meeting of the Project on Improvement of Human Resources in Food Laboratories for Improvement of Quality of Milk and Dairy Products (hereinafter referred to as the "Project") was held on 23 of March 2022 at the Ministry of Economy and Commerce of the Kyrgyz Republic under the chairmanship of the Project Director.

As the major issues taken in the meeting, the issue on the explanation of the progress of the project and Work Plan in Phase 2 and the recent project activities by the time of the 4th JCC meeting were presented by the expert and counterparts respectively. The requests for an addition of some activities in the project were raised from the counterparts. The updated Monitoring Sheet (version 4.0) was also submitted to the JCC for the approval.

The details and conclusion of the Meeting are given in the ATTACHMENT. This document was written in both English and Russian languages in duplicate. In case of any discrepancy of interpretation, the English text shall prevail.

Bishkek, 23 March 2022

Mr. KAWAMOTO Hiroyuki
Chief Representative,
Japan International Cooperation Agency
Kyrgyz Republic Office
(JICA)

Mr. SHABDANOV Bakytbek Kasmalievich
Head of Department of
Technical Regulations and Metrology,
Ministry of Economy and Commerce of
the Kyrgyz Republic

Mr. HAGIWARA Satoru
Chief Advisor,
The FLAQUM Project

Mr. ABDYKADYROV Sultan Abdyldaevich
Director of Department of Disease Prevention
and State Sanitary Epidemiology Surveillance,
Ministry of Health of the Kyrgyz Republic

Mr. SHARSHENBEKOV Almaz Kamchybekovich
Director of Veterinary Service,
Ministry of Agriculture of the Kyrgyz Republic

Date: 23rd of March 2022
Time: 10:00-11:45
Venue: Ministry of Economy and Commerce of the Kyrgyz Republic

Opening remarks:

Mr. Shabdanov Bakytbek, Head of Technical Regulation Department (Project Director)

Mr. Shabdanov welcomed participants of JCC meeting on behalf of the Ministry of Economy and Commerce of the Kyrgyz Republic and told the achievements and progress of the Project activities would be presented by partners and technical experts at this meeting. He also proposed to discuss the implementation of the phase II of the Project and requests of implementing agencies.

Mr. Kawamoto Hiroyuki, Chief Representative of JICA Office in the Kyrgyz Republic:

Chief Representative of JICA Kyrgyz Republic Office welcomed all participants and expressed gratitude to Mr. Shabdanov and counterparts for the effort to keep this project moving forward even under the pandemic situation and successfully implementing until now.

He highlighted productive work of the Working Group of implementing agencies not only on the implementation of project activities, but also on identification and discussion gaps in the implementation of Food Safety and Regulation System that complies with EAEU regulations. He also highlighted the conducted on-site practical training based on the HACCP principles. JICA Kyrgyz Office also joined and observed one of on-site trainings by the Project. JICA believes FLAQUM offers an assistance to accelerate the progress of the Kyrgyz government's goals for an improvement of the product safety management system which may lead to the increase of exports.

Project is also making progress in capacity building of the laboratory such as improving internal quality control, improving technical abilities of laboratory technicians with utilization of uncertainty assessment program.

JICA is now looking for the project contribution to the development of training with the TOT system, and strengthen the future sustainability of the project outcomes. Mr. Kawamoto expressed his hopes for the fruitful cooperation, successful implementation during the remaining extended Project period.

1. Presentation by Japanese expert

Consultant Team Leader Mr. Ueno Kazumi made a presentation including a summary of Work Plan, major activities in the Phase I, and Phase II that started from February 2022.
Presentation of Mr. Ueno was consisted of mainly three topics below:

First topic: 3 pillars in the project activity

1st pillar is about management related activities such as holding JCC meeting, WG meeting activities and preparation of the reports.
2nd pillar is about "Human Resource Development support". In Phase I the Project provided the workshop for Laboratory Quality Control inviting 3rd country (Latvian) expert and workshop for HACCP activity by inviting Belarusian expert. During COVID-19 period the Project provided the remote trainings for Laboratory Statistics and HACCP principles in discussion with C/P.
3rd pillar is on the technical supports to the activity of laboratories and HACCP inspection (DPSSES, CSM, CVDE, VS)

Second topic: Issue-Solving Approach.

Mr Ueno explained that the Project is taking the "Issue-solving approach" to the laboratory technicians and HACCP inspectors. For Laboratory, it is important to consider the improvement of laboratory to produce reliable data that comply with EAEU Technical Regulation, particularly emphasizing the importance of equipment maintenance, method validation instructed by the expert.

For the HACCP inspector, the most important matter is practical HACCP training and knowledge, said Mr. Ueno, and added his expectation in increasing the number of inspectors at trainer level for future inspector development. He also noted the increase of assignment period of Chemical Analysis expert up to 1.5 months in Phase II (from 1 month in Phase I).

Third topic: Comparison between Phase I and Phase II

During the Phase I, the Project mainly focused on baseline survey, providing "Reference Materials" to the laboratories, conducting trainings (online and offline mode) for laboratory technicians and HACCP inspectors.

As for Phase II, the C/P teams of HACCP inspection have already carried out factory trial inspections as one of practical trainings. The Project is planning to continue such practical activities so that C/Ps can acquire more knowledge and experiences which can guide them to the development of the Kyrgyz own check sheet in future. The evaluation test for Laboratory technicians and HACCP inspectors are also given to the C/Ps twice a year to confirm the understanding level of C/Ps on relevant expertise.

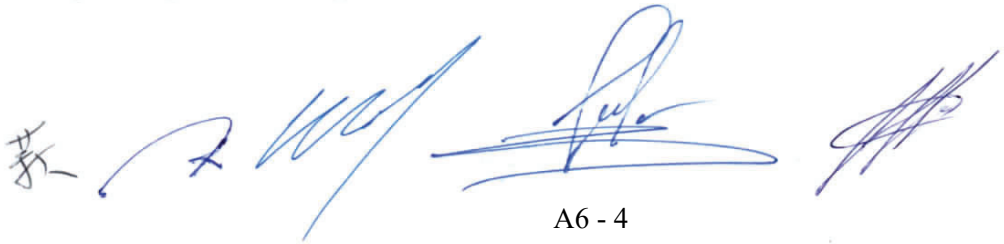
2. Presentations by Kyrgyz side

Ms. Elena Turenko (CVDE Lab): She presented about consultations on the optimization of methods for the determination of antibiotics using HPLC with a hermetic detector, and the determination of aflatoxin M1. Based on the equipment optimization, tests were carried out in the presence of a Japanese expert. The next step was to carry out diagnostics and tuning of HPLC with a mass spectrometric detector with the provision of a tuning solution from the Japanese expert. In the process, a report was obtained, which was sent to the Shimadzu service centre in Japan, and received recommendations for LCMS-8050. In addition, a complete HPLC diagnostic with a mass spectrometric detector was carried out in order to restore the initial intensity of the detector. In the presence of a Japanese expert, the number of maintenance activities were carried out by CVDE specialists. Experimental activities were also carried out in order to obtain calibration curves and confirm the competence of Lab specialists in the process of carrying out these activities. Ms. Turenko mentioned about possibility on communication with technical experts on emerging issues.

Ms. Azima Yrsalieva (DPSSES Lab): She presented activities that were carried out under the coordinating of Japanese Expert Terunuma Yukimi, a chemist, who was also engaged to carry out the audit programs. As a result of the training for operation and maintenance of atomic absorption spectroscopy, the personnel were awarded certificates of participation. Also Ms. Yrsalieva mentioned one more useful support from the Project in 2022: the laboratory received 7 reference materials with accompanying certificates for the determination of toxic metals in food products - lead, zinc, cadmium, tin, chromium, nickel, mercury.

Ms. Aigul Aksupova (CSM Lab): She presented on Japanese Experts support for Laboratory of CSM in the field of sample preparation for determination of heavy metals by ICP (Induced Coupled Plasma) spectroscopy. She also marked that JICA Project dispatched reagents, since reagents are a very big problem in laboratories. She proposed for the remaining year and half of the Project is to focus on dairy products and pay more attention to antibiotics, verification methods specifically on HPLC (high-performance liquid chromatography) and also to conduct Proficiency Testing at the international level through a Japanese provider if possible.

Ms. Mira Iskembaeva (VS HACCP): She made a presentation on activities under the guidance of Project FLAQUM such as conducting a trial onsite factory inspection and receiving basic information on production control, a flowchart of the production process, determined CCP (Critical Control Point), and PRP (Prerequisite Program). She was thankful for the training materials that provided by Japanese Experts. Counterparts are planning to develop HACCP checklists in production for further work, using the experience of Japan.



Mr. Kawamoto Hiroyuki
He thanked all presenters and noted a good achievement of the Project by now despite of facing a challenging situation under COVID-19. He shared his opinion that this training experience will be a precious asset for the future. He hopes that the developed guidance during the Project will be useful and valuable for future specialists.
He was impressed by good collaboration of 3 C/P ministries through even online during pandemic situation.

Mr. Shabdanov Bakytbek
Mr. Shabdanov, as a chairman of JCC, showed his thankfulness to the Project for conducting practical activities, and noted that some activities are still in a small percentage of completion and hoped (as citing those below) the activities can be fully completed within the second phase.
- Prepare practical guidance on laboratory testing and food inspection.
- Carrying out TOT on the 2nd phase for HACCP groups
- Developing a training system for TOT inspectors
- Technology improvement for conducting verified or validated methods
- Improving technical capabilities using methods of uncertainty
- Training of inspectors in the opportunity of implementing the HACCP system

Mr. Shabdanov pointed out the importance of keeping the gained knowledge and experiences in the institutional form and developing a methodology for training specialists. He also inspired all C/Ps to make suggestions to the JICA advisory mission when they arrive here in June 2022. As considering the remaining period for the project activity, he emphasized to the C/Ps on doing the best in gaining the knowledge and pass on to others.
Finally, he concluded with his appreciation to the project team, Mr. Kawamoto and JICA Kyrgyz Republic Office.

3. Summary of requests from C/Ps:

a. Ms. Mira Iskembaeva (VS):
1. To assist the preparation of HACCP inspection manual;
2. To extend onsite training hours from half day to whole day since the legislation of the Kyrgyz Republic requires 10 days for small enterprises and 15 days for large enterprises in regular inspection.

b. Mr. Ermek Kurmankulov (CVDE):
He expressed his appreciation to JICA FLAQUM Project, and add there is also a collaboration of JICA with Kyrgyz Republic within another Technical Cooperation project (MOMP) on the milking hygiene program. JICA also conducts trainings for development of private veterinarian services through public-private and academic partnership. He mentioned about activities carried out with the expert on Chemical Analysis and the expert on Microbiology in Phase I. At the end of his speech, he added one request for the project assistance to invite an expert to train a new method for the detection of antibacterial drugs using biochip array in regards of TR EAEU 021 for the new 54 antibiotics.

c. Ms. Bubujan Kamchybekova (DPSSES HACCP):
She commented that the experts (Mr. Hatano & Mr. Ueno) in charge of HACCP gave them the informative knowledge on food microbiology which are widely used in Japan.
She asked a possibility of providing a training for ToT program by the Japanese experts, with certification.

d. Mr. Ueno Kazumi
He mentioned that the Project provided the practical training with considering the preparation of SOP (Standard Operating Procedure) and manuals for the laboratory as outputs. And C/Ps in HACCP can

also share the check sheet and manual (to be combined later as one booklet) for the future staff of C/P's institutions. He added that he would share the idea with C/Ps respectively for finalizing all materials as a booklet, and requests from C/Ps will be discussed with JICA Head Quarter and JICA Kyrgyz Republic Office after receiving the request documents.

Mr. Bakyt Shabdanov on behalf of MOEC, appreciate all participants of JCC meeting and especially representative of JICA for continuously support and express his hope for further fruitful cooperation

ANNEX

Annex I. Monitoring sheet ver.4.0

Annex II. Plan of Operation ver.4.0, Reference material procurement to the laboratories

Annex III. Agenda of 4th JCC meeting

Annex IV. List of participants

Annex V. Five (5) presentation materials (Power Point)

- One (1) material for Project Expert
- Four (4) materials for Project Counterparts (CSM, DPSSES, SV, CSM)

End of Document

6. 合同調整委員会議事録等　(2) 5th JCC

MINUTES OF MEETING
ON THE 5TH JOINT COORDINATION COMMITTEE
FOR THE PROJECT ON IMPROVEMENT OF HUMAN RESOURCES
IN FOOD LABORATORIES FOR IMPROVEMENT OF QUALITY OF MILK
AND DAIRY PRODUCTS IN THE KYRGYZ REPUBLIC (FLAQUM)

The fifth Joint Coordination Committee (hereinafter referred to the "JCC") Meeting of the Project on Improvement of Human Resources in Food Laboratories for Improvement of Quality of Milk and Dairy Products (hereinafter referred to as the "Project") was held on 30 of November 2022 at the Ministry of Economy and Commerce of the Kyrgyz Republic under the chairmanship of the Project Director.

As the major discussion points in the meeting, there were two issues, the explanation of the recent project activities by the time of the 5th JCC meeting by the Project expert and counterparts, and the issue on extension of the project period or launching the next phase of the Project by the counterparts. Besides the revision of the indicators of the Project Design Matrix (PDM) and updated Monitoring Sheet (version 5.0) were also submitted to the JCC for the authorization.

The details and conclusion of the Meeting are shown on the ATTACHMENT. This document was written in both English and Russian languages in duplicate. In case of any discrepancy of interpretation, the English text shall prevail.

Bishkek, 30 November 2022

Mr. KAWAMOTO Hiroyuki
Chief Representative,
Japan International Cooperation Agency
Kyrgyz Republic Office
(JICA)

Ms. USENBEKOVA Ainura
Deputy Minister,
Ministry of Economy and Commerce
of the Kyrgyz Republic

Mr. UENO Kazumi
Team Leader,
The FLAQUM Project

Mr. SHABDANOV Bakytbek
Head of Department. Department of
Technical Regulations and Metrology,
Ministry of Economy and Commerce
of the Kyrgyz Republic

Mr. ABDYKADYROV Sultan
Director of Department of Disease Prevention
and State Sanitary Epidemiology Surveillance,
Ministry of Health of the Kyrgyz Republic

Mr. JUSUPOV Ashirbai
Director of Veterinary Service,
Ministry of Agriculture
of the Kyrgyz Republic

ATTACHMENT

Date: 30th of November 2022
Time: 10:00-11:45
Venue: Ministry of Economy and Commerce of the Kyrgyz Republic

1. Opening remarks:

Ms. Usenbekova Ainura, Deputy Minister
Ms. Usenbekova welcomed participants of 5th JCC meeting and expressed her deep gratitude to Project team and Government of Japan for effort and assistance on developing the economy and human resources in the Kyrgyz Republic.

Mr. Kawamoto Hiroyuki, Chief Representative of JICA Office in the Kyrgyz Republic
Chief Representative of JICA Kyrgyz Republic Office welcomed all participants and expressed gratitude to Ms. Usenbekova and counterparts of the Project for the continuous effort and flexibility. He briefly talked on Project activity, Project team focused on providing not only theoretical trainings such as training on Statistical Processing and Seven principles of HACCP to online tools and build foundation, but also practical training such as the Trainer of Training (ToT) for dairy processing factories and regional inspectors for further activities. Mr. Kawamoto pointed his believes that the accumulation of each single activity lead Project Counterparts to achieve great achievements and also mentioned about upcoming trainings in Japan to counterparts.

2. Project progress and future plan

Mr. Ueno Kazumi (Project Team Leader) made an explanation about three approaches within the framework of Project Activities to assist the counterparts:

1) Sending Japanese experts to Kyrgyzstan and provide technical transfer to C/Ps
2) Assisting by 3rd country experts. Project has already invited experts from Latvia and Belarus.
3) Technical training in Japan to understand the food safety regulatory system in Japan

Mr. Ueno summarized the project progress and their results about capacity development of laboratories and human resource development for HACCP inspection as follows:

1) Laboratory: Laboratory chemists have enough knowledge and skill, but they have sometimes encountered problems in the analysis. Japanese Experts can contribute to improve the laboratory capacity with them to investigate issues, consider countermeasures, consider effective means, and solve problems. Results include improved recovery rates, improved

instrument sensitivity, and effective use of instruments and software. This is the Project's approach for solving problems.

2) HACCP: Food Inspectors who are the target of this project have already conducted inspection for food factories and have enough knowledge and experience, but regarding HACCP issue, it cannot be said that sufficient training and experience have been accumulated so far. Experts conduct training on the seven principles of HACCP and Prerequisite Programs (PRP), and Counterparts provide trainings as ToT for food factory staff and regional inspectors by utilizing project programs. Expected results in the future include improvement of training programs, improvement of check sheets for inspection, and preparation of HACCP training textbooks.

3. Presentation by the C/Ps on the recent main activities and achievement

Mr. Kurmankulov Ermek (CVDE Lab): Improvement of analytical techniques using laboratory equipment such as GC, GC-MS, LC, LC-MS/MS, and learning of maintenance and management techniques. Method implementation for analysing antibiotics on Honey, Milk and Poultry.

Ms. Djumakanova Aigul (DPSSES Lab): Analysis techniques for Vitamins and Ochratoxins in dairy products, antibiotics and hydroxy methyl furfural in honey, with analytical equipment HPLC were improved, and the laboratory is extending the area of analysis.

Ms. Alseitova Anara (CSM Lab): Accreditation of methods in the laboratory was prepared by CSM through the project activities.

Ms. Isakova Iren (DPSSES HACCP): Explanation on activities such as ToT Program for HACCP Inspection, creating check sheets with HACCP inspection, and procedures of selection of senior trainers. 8 inspectors were selected as National level trainers, and they provided training for factory staff and regional inspectors.

Ms. Mira Iskembaeva (VS HACCP): Training of HACCP 7 principles and improvement of Check Sheet for Farm Inspection. Trained inspectors by the Project conducted training seminar for regional inspectors in Chui Region as ToT.

4. Requests from the Counterparts

CVDE Lab: Request for extension of 1 to 1.5 years or launch the next phase of the Project in order to develop further analytical methods and analysis of other foods (such as dried fruits, honey, and export oriented products)

DPSSES Lab: Utilization technology for newly introduced equipment such as LC-MS/MS, monitoring methods for antibiotics, etc.

CSM Lab: Further analytical technique improvement.

DPSSES HACCP: Mentioned one-year moratorium for upcoming 2023 year. Request for the trainings in the regions and more detailed programs such as Traceability and Product Recall Program.

VS HACCP: Expansion of training program for Veterinary Inspectors all over the Kyrgyz Republic

5. Conclusion of the meeting:

Counterparts discussed and impressed their opinions on extending Project Period or launching the next phase of the Project or any opportunity for new Project in cooperation with JICA in order to develop and improve activities of Counterparts. The project responded that the availability of training in other areas or some other options will be considered with JICA within next year during the project period, and agreed.
Mr. Kasymaliev on behalf of MOEC, appreciate all participants of JCC meeting with productive discussion and especially the representative of JICA for continuous support and express his hope for further cooperation.

ANNEX
Annex I. Monitoring sheet ver.5.0
Annex II. Plan of Operation ver.5.0,
Annex III. Agenda of 5th JCC meeting
Annex IV. List of participants
Annex V. Six (6) presentation materials (Power Point)

- One (1) material for Project Expert
- Five (5) materials for Project Counterparts (CVDE, DPSSES (2), CSM, VS)

End of Document

MINUTES OF MEETING
ON THE 6TH JOINT COORDINATION COMMITTEE
FOR THE PROJECT ON IMPROVEMENT OF HUMAN RESOURCES
IN FOOD LABORATORIES FOR IMPROVEMENT OF QUALITY OF MILK
AND DAIRY PRODUCTS IN THE KYRGYZ REPUBLIC (FLAQUM)

The sixth Joint Coordination Committee (hereinafter referred to the "JCC") Meeting of the Project on Improvement of Human Resources in Food Laboratories for Improvement of Quality of Milk and Dairy Products (hereinafter referred to as the "Project") was held on 26 of May 2023 at the Ministry of Economy and Commerce of the Kyrgyz Republic, the Deputy Minister of Economy and Commerce (or the Project Director) chaired the meeting.

The issues on the explanation of the report of terminal evaluation study by joint evaluation mission, the results of the technical training in Japan held in February 2023, and future project activity plan were mainly discussed. The updated Monitoring Sheet (version 5.0) was also submitted to the JCC for the authorization.

The details and conclusion of the Meeting are shown on the ATTACHMENT. This document was written in both English and Russian languages in duplicate. In case of any discrepancy of interpretation, the English text shall prevail.

Bishkek, 26 May 2023

Mr. KAWAMOTO Hiroyuki
Chief Representative,
Japan International Cooperation Agency
(JICA) Office in the Kyrgyz Republic

Mr. MALAEV Nazarbek
Deputy Minister,
Ministry of Economy and Commerce
of the Kyrgyz Republic

Mr. UENO Kazumi
Team Leader,
The FLAQUM Project

Mr. SHABDANOV Bakytbek
Head of Department. Department of
Technical Regulations and Metrology,
Ministry of Economy and Commerce
of the Kyrgyz Republic

Mr. ABDYKADYROV Sultan
Director of Department of Disease Prevention
and State Sanitary Epidemiology Surveillance
of Ministry of Health of the Kyrgyz Republic

Mr. ZHUSUPOV Ashirbai
Director of Veterinary Service,
Ministry of Agriculture
of the Kyrgyz Republic

ATTACHEMENT

Date: 26th of May 2023
Time: 14:00-16:25
Venue: Ministry of Economy and Commerce of the Kyrgyz Republic

1. Opening remarks:

Mr. Malaev Nazarbek, Deputy Minister welcomed participants at 6th JCC meeting. He shared information about 314 food producing and processing companies, which are exporting within EAEU region. And some of them are dairy companies. He also explained on situation about inspection of Federal Service for Veterinary and Phytosanitary Surveillance (Russian Federation) and as a result of these inspections, some companies were recommended to strengthen quality control of laboratories, and to assure the traceability system of products. He expressed his hope on JICA Project experts support and for further fruitful cooperation.

Mr. Kawamoto Hiroyuki, Chief Representative of JICA Office in the Kyrgyz Republic expressed his gratitude to attend 6th JCC FLAQUM project, and thankfulness for continuous support for commitment for the project for extended period. He marked several progresses since last JCC meeting: training of Kyrgyz CPs in Japan, the important step of capacity building and another group of CPs has been prepared to follow. The project has also initiate on farm trainings based on HACCP principles and this is the strategic move to enhance safety and quality of food production system. One of essential aspect of the Project is the concept of ToT systems, the establishment of such system is instrumental in ensuring long term sustainability of the project by empowering individuals with the ability to share the technology and skills. As he noted it is a final phase of project, it is a critical time to assess and strategize to the future. This terminal evaluation will help to better understand our strength and areas for improvement. He mentioned Deputy Minister's explanation, one of the major challenges is the dairy sector and this country is dealing with the ban from Russia on dairy products, he pointed that as far the activities achieved in quality area from this Project, it should be resolved soon. He expects this meeting will be very fruitful for participants for brighter future for dairy sector of Kyrgyz Republic.

Mr. Malaev shared information on dairy products export, and some issues related to food safety in the dairy sector. He expressed his hope that training participants in Japan will be able to transfer their knowledge. He was grateful for JICA support to Kyrgyz Republic expressed his hope for further cooperation.

2. Presentation on the results of training in Japan by C/Ps

Ms. Jumakanova Aigul (DPSSES Lab): Ms. Jumakanova presented combined presentation form three laboratories (DPSSES, CSM, CVDE) because they have same issues, same testing. The presentation contains information on trainings within JICA FLAQUM Project in Japan and about visiting several places, such as testing laboratories, local markets, and dairy factory. She marked strong points of laboratories in Japan:

- Sustainable support from Government sector
- Fully equipped laboratories
- Monitoring of imported food before entering local markets.

Also Ms. Jumakanova shared her impression on tool such Immuno-Affinity (IA) Columns for Aflatoxin that are commonly using in laboratories in Japan, and marked that these columns are more cost effective in compared to the methods that they use in (DPSSES) laboratories,

Ms. Abamuslimova Nazgul (DPSSES HACCP): Presentation was provided from the points of the factory inspector. The difference of HACCP legislation between two countries was identified: a single requirement for all enterprises in the Kyrgyz Republic, and the flexible implementation system in Japan. Food safety administrative systems were learned in the trainings: such as food safety surveillance system, import food monitoring, agricultural products standards, traceability system, and HACCP training base. And continuous further cooperation is proposed as the action plan: capacity building on HACCP with broad coverage, food safety monitoring with risk-based approach, implementation of a traceability system, training base for HACCP etc.

Ms. Iskembaeva Mira (VS HACCP): After explanation of current situations on dairy sector and HACCP implementation and related issues in the Kyrgyz Republic, the results of training in Japan were presented, and the draft action plan was proposed: such as developing HACCP guideline for veterinary inspection, expansion of training for regional inspectors, and the assistance for the production of organic products of animal origin, etc.

Mr. Malaev asked on activities that had been carried out by project.

Ms. Jumakanova replied that Japanese expert for laboratory visited 5 times and provided trainings on implementing new methods of analysis using the equipment within Russia Project, and on the other part of project had a training in Japan in February. This project aimed on milk and dairy products, and right now we are carrying out analysis on mycotoxins, and would like to analyse more parameters, therefore asking for extending of the project duration. During the training in Japan, they had known that preventive measures of disease is supported on institutional level, while in Kyrgyz side institutional involvement comes after disease. Therefore, they would like to receive institutional support, DPSSES in need case studies and experience of Japan, on supporting laboratories using tools such as legislation base, institutional support, strengthening food safety on institutional level.

Mr. Malaev asked about impact of trainings.

Ms. Jumakanova replied that Japanese expert provides them not only training on making analysis but also practical trainings on proper maintenance of equipment. For example, cleaning of GS-MS, replacement of spare parts, it is very useful trainings, emphasizing that equipment is new for DPSSES laboratory. As a result of trainings, they can save the cost of maintenance service, by doing themselves.

Ms. Kirino Yumi (Leader of Japanese-side Evaluation Team) confirmed about possibility of applying methods using Immuno-Affinity (IA) Column in Kyrgyz Republic that mentioned by Ms. Jumakanova.

3. Project Activities and Future Plan

Mr. Ueno Kazumi (Team leader of FLAQUM project): Recent activities were briefly explained from the points of project management by team leader. After this terminal evaluation study and 6th JCC meeting, FLAQUM project will have several activities until the end of the project period, such as End-line survey in August, training in Japan in October, 7th JCC meeting in November, and submission of completion report as shown in the future plan schedule.

4. Presentation from Terminal Evaluation mission

Mr. Kashiwazaki Yoshihito (Evaluation Analysis Consultant):

1) **Outline of the terminal evaluation**

Evaluation method based on the project design matrix (PDM) and six evaluation criteria were explained, and the achievement of the project was assessed for each indicator of related output.

[Output1: MOEC, MOH, MOA discuss and agree the project activities and structure]

1.1 Implementation of working group (90% achieved)
1.2 Three-year training plan is not yet formulated, but it is planned by the end of the project (0% achieved)

[Output2: Activities for veterinary service and CVDE]

2.1 Skills of laboratory technicians are assessed as appropriate level (Achieved)
2.2 Laboratory has accredited with latest version of ISO/IEC17025 (Achieved)
2.3 HACCP training program has been developed (Achieved)
2.4 Factory inspection trials have been carried out. (Achieved)
2.5 HACCP inspection training program has been developed and need to be approved (Achieved)

[Output3: Activities for DPSSES]

3.1 Skills of laboratory technicians are assessed as appropriate level (Achieved)
3.2 Laboratory has accredited with latest version of ISO/IEC17025 (Achieved)
3.3 HACCP training program has been developed and need to be approved (90% achieved)
3.4 Factory inspection trials have been carried out. (Achieved)
3.5 HACCP inspection training program has been developed (Achieved)

[Output4: Activities for CSM]

4.1 Skills of laboratory technicians are assessed as appropriate level (Partially achieved: 60% met the criteria, although the target benchmark was set at a higher threshold of 70%)
4.2 Laboratory has accredited with latest version of ISO/IEC17025 (Achieved)

[Project Purpose: Conformity assessment system is developed in accordance with TR]

4.1 Number of reliable testing methods (Achieved)
4.2 Number of management documents (Achieved)
4.3 Inspection check sheet has been developed and approved, and to be revised later (90% achieved)

- **Project Purpose will be achieved by the end of the Project.**

2) **Results of evaluation survey**

Ms. Dushenalieva Cholpon (Leader of Kyrgyz-side Evaluation Team)

Evaluation Results are explained based on the six (6) evaluation criteria as follows.

[1. Relevance: High]

Consistent with EAEU Technical Regulations, needs of target groups.

[2. Coherence: Moderate]

Consistent with assistance policy, effective demarcation in cooperation scheme

[3. Effectiveness: High]

Project activities were effective to produce positive outcomes; installation of equipment was delayed but did not seriously affect the activities.

[4. Efficiency: High]

C/Ps and experts were sufficient and appropriately allocated, efficient utilization of the equipment provided by Russia.

[5. Impact: High]

The solid progress for Overall Goals has been acknowledged. The Kyrgyz inspectors realize that humane emotions also important on the introduction of HACCP. FLAQUM becomes a kind of platform for interaction at the individual level of C/Ps.

[6. Sustainability: Moderate]

The administration and collaboration capacities of the implementing agencies have been strengthened. Solid commitment of the related institutions is necessary. Technical skills of the C/Ps will be secured through continuous utilization of the program and system developed.

3) **Conclusion and recommendations**

Ms. Kirino expressed her gratefulness for project members' effort, and various information for the mission. Based on the evaluation results presented by Ms. Dushenalieva, Ms. Kirino made a conclusion **that almost all activities of this project have been implemented as scheduled. And expect that project purpose will be achieved soon, and accordingly it is concluded that the project should be closed at the end of December 2023 as scheduled.** She also added that technical skill of laboratory staff was improved, and 3 labs improved their management according to ISO 17025, also training modules were developed for HACCP inspectors and inspection check sheet was developed. Also, various kind of test method was improved and there are many test methods which are now reliable and was high quality.
Pointed on activities 3.6 and 3.7 that project was expected to establish food safety management system of this country. Ms. Kirino made an explanation that food safety management system should be developed under the concrete policy and requires collaboration with third party of private sectors. She explained about 3 recommendations that cover gaps between recent activities and project goals.
Three (3) recommendations from the mission:

1. "Japanese experts and Kyrgyz professionals will standardize the check sheet not only for one single institution, but across a relevant institution to make inspection consultation scheme according to achievement level of targeted factories".
2. "Draft guidelines for food safety management system has been developed by referring to Japanese one. As for recommendation 2, we have plan to have another study trip to Japan in October this year. So, the findings in that study trip will help draft this guideline for this country".
3. "To train relevant staff using the updated check sheet, institutionalize the training scheme to be held regularly with appropriate budget allocation".

And also informed about approved checklist availability, and provide information about how several institutions using it during inspections on dairy factories. it was mentioned by her that some checklists have not been shared among several institutions and at the same on district level there are many inspectors who haven't learned how to utilize this checklist.

Ms. Dushenalieva expressed her impression with Project ways of activities. As she noted Japanese experts providing instructions on how to manage equipment, detailed explanation of analyzing data, how to check accuracy. The idea of Project is Capacity Building of Kyrgyz Republic.

5. Closing remarks

Mr. Malaev expressed his gratitude and mentioned that all aspects of the project activities, plans, and studies matches with the results of the report. And he mentioned that effective work was carried out.

Mr. Kawamoto expressed his appreciation to Deputy Minister, the members of 6th JCC, and to Ms. Kirino. He emphasized the importance of ongoing discussions in the future.

ANNEX

Annex I. Monitoring sheet (ver. 6.0)
Annex II. Plan of Operation (Ver. Ver. 7.0)
Annex III. Agenda for 6th JCC meeting
Annex IV. List of participants

Annex V. Six (6) presentation materials
Three (3) materials for Project Counterparts
One (1) material for Project Expert
Two (2) materials for Terminal Evaluation Mission

End of Document

6. 合同調整委員会議事録等　(4) 7th JCC

MINUTES OF MEETING
ON THE 7TH JOINT COORDINATION COMMITTEE
FOR THE PROJECT ON IMPROVEMENT OF HUMAN RESOURCES
IN FOOD LABORATORIES FOR IMPROVEMENT OF QUALITY OF MILK
AND DAIRY PRODUCTS IN THE KYRGYZ REPUBLIC (FLAQUM)

The seventh Joint Coordination Committee (hereinafter referred to the "JCC") Meeting of the Project on Improvement of Human Resources in Food Laboratories for Improvement of Quality of Milk and Dairy Products (hereinafter referred to as the "Project") was held on 29 of November 2023 at the Ministry of Economy and Commerce of the Kyrgyz Republic with the Deputy Minister of Economy and Commerce (the Project Director) as the chair person.

On the JCC, the results of the project implementation including technical training in the whole period of the project, and work products of the project were presented, and related discussions were held. The updated Monitoring Sheet (version 7.0) was also submitted to the JCC for the authorization.

The details and conclusion of the Meeting are shown on the ATTACHMENT. This document was written in both English and Russian languages in duplicate. In case of any discrepancy of interpretation, the English text shall prevail.

Bishkek, 29 November 2023

Mr. KAWAMOTO Hiroyuki
Chief Representative,
Kyrgyz Republic Office
Japan International Cooperation Agency
(JICA)

Ms. Usenbekova Ainura
Deputy Minister,
Ministry of Economy and Commerce
of the Kyrgyz Republic

Mr. UENO Kazumi
Team Leader,
The FLAQUM Project

Mr. SHABDANOV Bakytbek
Head of Department. Department of
Technical Regulations and Metrology,
Ministry of Economy and Commerce
of the Kyrgyz Republic

Mr. Asylbek Sydykanov
Acting Director of Department of Disease Prevention and State Sanitary Epidemiology Surveillance
of Ministry of Health of the Kyrgyz Republic

Mr. Ulugbek Kozhobergenov
Director of Veterinary Service,
Ministry of Agriculture
of the Kyrgyz Republic

ATTACHMENT

Date: 29th of November 2023
Time: 10:00-11:50
Venue: Ministry of Economy and Commerce of the Kyrgyz Republic (MOEC)

1. Opening remarks

Ms. Usenbekova Ainura, Deputy Minister, welcomed the 7th Joint Coordination Committee (JCC) meeting participants. She briefly outlined the project's history, highlighting its sustainability and its significant contribution to improve the quality infrastructure and human capital development. She noted that skills gained by personnel through their professional activities have an effective and lasting effect.
She mentioned that over a period of four years, the counterparties (C/Ps) have learned significantly, and as a team, they have developed a robust system. She thanked the partners from JICA for their support and fruitful collaboration. Additionally, she expressed her hope that the Ministry of Economy and Commerce of the Kyrgyz Republic (MOEC) will continue cooperation and partnership with JICA aiming to further deepen the economic relations between two countries.

She informed about the recent activities on the development of cooperation with Japan, in particular highlighting the visit of the President of the Kyrgyz Republic to Japan in November 2023 and the subsequent arrival of the Japanese delegation in the Kyrgyz Republic. She expressed MOEC's openness to cooperation with JICA and underscored the ministry's significant efforts in facilitating these activities.

Mr. Kawamoto Hiroyuki, Chief Representative of JICA Office in the Kyrgyz Republic expressed his gratitude to the participants of the 7th JCC meeting. He noted that this meeting marked the conclusion of the FLAQUM project. He mentioned that the FLAQUM project has made significant progress. The Terminal Evaluation conducted in May 2023, provided valuable insights and recommendations for areas needing improvement, which have been instrumental in guiding their efforts. He reported on the training of Kyrgyz counterparts in Japan as a crucial step in capacity building. He added that he had an opportunity to meet with the participants in Japan in October 2023 and JICA expects these trainees will effectively apply knowledge and experience to achieve further goals. Also, he noted that HACCP training conducted in Issyk-Kul and Talas regions were another significant milestone for the project.

He noted his awareness of C/P's application for technical support to the Japanese Government, which is currently under consideration.

Mr. Kawamoto expressed his hope that Kyrgyz C/Ps will show strong commitment to utilize the results of the FLAQUM project in line with JICA's objection to capacity building of C/Ps. In his concluding remarks, he respectfully urged the Kyrgyz Government to address the recommendations from the terminal evaluation mission for the post-project period. JICA looks forward to seeing the Government not only consolidate but also expand outcomes of the FLAQUM Project. Also, he added that JICA is committed to continue dialogue and considerations on food safety policy support.

In closing, Mr. Kawamoto thanked all the participants of 7th JCC for their attention and commitment to the project.

2. Awarding from MOEC

Mr. Shabdanov Bakyt, Head of Department of Technical Regulation and Metrology of the MOEC announces the awarding of partners from JICA for improving the activities of food laboratories in the dairy sector. In acknowledgment of their efforts, the MOEC conferred the 'For Cooperation' medal to the following individuals:

- Mr. Kawamoto Hiroyuki, Chief Representative of JICA KR Office
- Mr. Ueno Kazumi, Team Leader of the FLAQUM Project

Additionally, MOEC presented commemorative gifts to other distinguished experts for their invaluable contributions:

- Mr. Tonai Fumio, Project Coordinator
- Mr. Nagata Masahiro, Chemical laboratory Expert of the Project.

3. Presentation on the results of the project activities

Ms. Jumakanova Aigul (Laboratory Group) briefly informed about the chronology of the project, starting with the Master Plan Project on Inspection of Quality and Safety on Milk and Dairy Products from 2017, and this FLAQUM project started in 2019. She noted that the main contribution of this project is to increase the capacity and qualification of the staff of three laboratories: DPSSES, CVDE, and CSM, and particularly mentioned that the specialists have gained skills to improve the methods using newly installed equipment such as HPLC, LC-MS/MS, GC, and GC-MS for the determination of antibiotics, mycotoxins, and vitamins in food products. She thanked the JICA partners and experts of the FLAQUM project.

Mr. Imakeev Azamat (HACCP Group) reported on HACCP training activities in the project. He said that the aim of the project is to improve the capacity of sanitary and veterinary inspectors on the implementation of a food safety system based on HACCP for dairy products with developing training programs. He also mentioned that trained trainers in the project conducted training for regional inspectors and dairy companies as Training of Trainer (TOT).
And he shared his experience and impression from visiting Japan. He highlighted the following as some of references; the strict compliance with the regulations in terms of food safety, wide coverage of international certification systems such as ISO22000, and advanced training and qualification of personnel.
In response to the recommendations from the terminal evaluation, it was stated that the Agency will consider improvements not only in technology but also in systems to strengthen the legislation in the field of food safety through the implementation of a three-year human resources development plan. He thanked the JICA project, and MOEC.

Mr. Ueno Kazumi (Team Leader) presented the outcomes and accomplishments that the counterparties (C/Ps) attained during the Project period. The brief history of FLAQUM from 2019 was shared by the project flow. And he noted that despite the challenges posed by the COVID-19 pandemic in 2020, JICA continued the project activities in remote mode, and after the difficult period, the project could effectively provide training for each laboratory using newly installed equipment from Russia.

He emphasised that all indicators of Project Purpose and Outputs outlined in the Project Design Matrix (PDM) were achieved, significantly enhancing the capabilities of government agencies in both laboratory operations and HACCP implementation. This achievement contributed to the development of a conformity assessment system in the dairy value chain, thanks to the collective efforts of all C/Ps. Finally, he suggested the ideal future plan to expand the capacity and target areas using the Project outputs to solve the current problems.

Mr. Kawamoto Hiroyuki mentioned that during the COVID-19 period, JICA prolonged projects period and C/Ps received equipment, so it gives additional outcomes and send his best regards to all of C/Ps to make their sincerity force for the project.

4. Comments and requests from Counterparts

Ms. Aksupova Aigul (CSM Laboratory Group) thanked the JICA FLAQUM project. She informed that the project was very useful and the results obtained were very good. She expressed her hope that they will continue even further in terms of testing laboratories.

Mr. Imakeev Azamat thanked JICA for the support and training. He shared that during the project period they were able to develop guidelines for HACCP inspection of food production and were able to revise their checklists taking into account harmonisation with international standards. Several supports were very useful in the form of training programs and materials taking into account the best practices of Japan. In the future, they hope that the cooperation will also continue; they still have to institutionalise the project, as well as a 3-year plan. And in order to implement this plan, the C/Ps need advisory and financial support.

Ms. Iskembaeva Mira (VS HACCP Group) together with the above-mentioned colleagues expressed gratitude for the assistance provided in the framework of the project, which increased the capacity of VS inspectors for HACCP. The training of trainers was effective through theoretical and practical training. She expressed her hope that the project will be continued.

Mr. Kurmankulov Ermek (CVDE Laboratory Group) thanked JICA on behalf of CVDE Laboratory for the many efforts put in each laboratory. He expressed his hope that there will be more projects, regarding food safety of the VS, DPSSES and CSM. He expressed special thanks to the JICA experts who spent hours every day with the laboratory specialists; they proved themselves to be very qualified and professional experts. He noted that the experts adapted to each laboratory, and in addition to setting up the experiment, the experts shared their experience and knowledge, which is not written anywhere in any instructions. He expressed his experience on visiting Japan that the project also showed the cultural program during a trip to Japan. The whole program was carefully planned and organised..

Ms. Koshoeva Galia (MOEC) expressed her gratitude to the JICA project, all managers, and all the experts, and also mentioned that successful project implementation is a team effort.

5. Closing remarks

Mr. Shabdanov Bakyt addressed C/P to continue project activities and expressed his hope that they will have more projects with JICA. He thanked JICA for the fruitful cooperation.

ANNEX

Annex I. Monitoring sheet ver. 7.0)
Annex II. Plan of Operation (ver. 8.0)
Annex III. Agenda for the 7th JCC meeting
Annex IV. List of participants
Annex V. Three (3) presentations
- two (2) materials for Project Counterparts
- one (1) material for Project Expert

7. モニタリングシート（Ver.7.0）

Annex I

PROJECT MONITORING SHEET (ver7.0)

The Project on Improvement of Human Resources in Food Laboratories for Improvement of Quality of Milk and Dairy Products in The Kyrgyz Republic (FLAQUM)

Terms of Monitoring: June 2023 – December 2023

Submission: 29 November, 2023

Name: Shadbanov Bakytbek

Position: Head of Department of Technical Regulations and Metrology of Ministry of Economy and Commerce

Title: Project Director

Name: Ueno Kazumi

Position: Team Leader (FLAQUM)

Note: The sentences covered with a grey meshs are the contents newly described or partly revised in this version (7.0), and those with no gray mesh are the summary of contents written in the last version (6.0).

Summary

I. Progress

I-1 Progress of Inputs

JICA side

1. Dispatch of Japanese Experts and Outsourced Experts

1.1. Long term expert

Mr. Hagiwara Satoru: Chief Advisor in charge of project management.

Terms of assignment: Three (3) years from 17 July 2019 – 16 July 2022

*Emergency leave to Japan due to COVID-19: 22 Mar, 2020 – 20 Mar,2021

1.2. Technical Experts (Consultants): Nine (9) Experts were dispatched on the shuttle basis as scheduled below during this monitoring term.

① **Mr. Ueno Kazumi:** Leader of consultant team and in charge of Food Safety Management / Training (HACCP and Laboratory) Programs Design / Management Guidance

Terms of assignment (dispatch):

(Y2019) 1st: 19 Apr - 17 June, 2nd: 05 July - 04 Oct, 3rd: 26 Oct - 22 Dec

(Y2020) 1st: 01Feb - 15 Mar

(Y2021) 1st: 24 Apr – 13 June, 2nd: 09 Oct – 14 Nov

(Y2022) 1st: 11 Feb – 03 Apr, 2nd: 03 Jun – 30 Jul, 3rd: 07 Oct – 03 Dec

(Y2023) 1st: 04 Apr –03 June, 2nd: 21 July – 3 Sep, 3rd: 04 Nov – 16 Dec

②**Mr. Nakatani Masayoshi**: Operation Advisor
Terms of assignment:
(Y2022) 1st: 08 July – 28 Aug, 2nd: 18 Nov – 22 Jan, 2023
(Y2023) 1st: 19 May –10 July, 2nd: 26 Aug – 24 Sep

③**Mr. Tonai Fumio**: Project coordinator
Terms of assignment:
(Y2019) 1st: 19 Apr - 17 June, 2nd: 15 July - 30 Aug, 3rd:18 Oct -12 Dec
(Y2020) 1st: 25Jan - 23 Feb.
(Y2021) 1st: 23 Apr - 29 May, 2nd: 26 June – 01 Aug
(Y2022) 1st: 11 Feb – 03 Apr, 2nd: 20 May – 26 June, 3rd: 09 Sep – 30 Oct
(Y2023) 1st: 12 Mar – 29 Apr, 2nd: 30 June – 06 Aug, 3rd: 28 Oct – 10 Dec

④**Mr. Terunuma Yukimi:** in charge of Internal Quality Control for laboratory testing
Terms of assignment:
(Y2019) 1st:02 Aug - 30Aug, 2nd:23 Nov - 22 Dec.
(Y2022) 1st: 11 Feb – 20 Mar.

⑤**Mr. Hatano Mamoru:** in charge of HACCP introduction:
Terms of assignment:
(Y2019) 1st: 01 Sep - 30 Sept., 2nd: 09 Nov- 24 Nov.
(Y2020) 1st: 08 Feb - 29 Feb.
(Y2021) 1st: 26 June – 25 July
(Y2022) 1st: 11 Feb – 12 Mar, 2nd: 7 July – 7 Aug, 3rd: 23 Oct – 27 Nov
(Y2023) 1st: 30 June – 30 July

⑥**Ms. Fukagawa Hiromi:** in charge of Market Survey
Terms of assignment:
(Y2019) 1st: 01 - 15June, 2nd:01 - 15 Sep
(Y2023) 1st: 29 July – 26 Aug

⑦**Mr. Nagata Masahiro:** in charge of Chemical Analysis
Terms of assignment:
(Y2021) 1st: 14 May - 13June, 2nd: 16 Oct – 14 Nov
(Y2022) 1st: 20 May – 03 July, 2nd: 09 Sep – 16 Oct
(Y2023) 1st: 09 May – 08 June, 2nd: 05 Aug – 27 Aug, 3rd: 07 Nov – 03 Dec

⑧**Mr. Ozono Tatsuya:** in charge of Microbiological Testing
(Y2021) 1st: 16 Oct – 14 Nov

⑨**Mr. Iizuka Shinji:** in charge of Microbiological Testing
(Y2022) 1st: 03 June – 03 July
(Y2023) 1st: 09 May – 08 June

1.3. Outsourced (local and foreign) Experts

(1) The project contracted with one local consultant (Ms. Kozlova Larisa) for the baseline survey (completed).
(*The survey report was already shared with Ministry of Economy and Commerce, Ministry of Health, Veterinary Service, and JICA in February,2020)

(2) The project invited the expert from Latvia as a lecturer of **the workshop on "Laboratory Quality Management**" which was held for 3days from 16 -18 Dec, 2019 in Bishkek.
Expert profile: Dr. Vadims Bartkevics, Head of Laboratory, Institute of Food Safety, Animal and Environment "BIOR", Latvia.

(3) The project invited the expert from Belarus as a lecturer of **the workshop on "Food Hygiene and HACCP inspection"** which was held for 3days from 17 -19 Feb, 2020 in Bishkek.
Expert profile: Ms. Alena Bulavina, Head of department for confirmation of conformity of food products and licensing, Belarusian State institute of Metrology.

2. Other daily operation costs.

Project is sharing the costs for employment of four (4) support staffs, project vehicles and other necessary costs related to the project activity.

3. Equipment/Material procurement

Based on the requests of 3 laboratories, the project purchased necessary reference materials from local agent for the use of their laboratories (The list of reference materials is shown in ANNEX II

4. Promotion of training program in Japan

(1) Under recommendation of the project, one (1) applicant, Ms.Mars kyzy Zhazira, Senior inspector of State Inspectorate (SI), has participated in the JICA training course, namely "Local Industry Development through the enhancement of Hygiene and Quality Management for Animal Sourced Foods" for 2 months from Feb to Mar 2020.

(2) The project initially organized the C/P training in Japan for 11 C/Ps (5 in laboratory test and 6 in HACCP). But the training plan was rescheduled twice for the reasons of JICA's difficulty to accept at the project proposed timing in 2020 and succeeding COVID-19 pandemic.

(3) JICA decided the number of times and participants for the training in Japan, ten members each on February and October 2023. And C/P proposed the list of candidates to the project.

(4) The project assisted to prepare the application forms for the participants who went to Japan in February and October 2023, and the documents were submitted to JICA through the Ministry of Finance

Kyrgyz side

1.1 Provision of office space for the project

One office room and electricity charge has been continuously provided to the project team by the Ministry of Economy and Commerce of the Kyrgyz Republic.

1.2 Assignment of counterpart officials:

Following high official, managing officers, laboratory technicians and factory inspectors of the three organizations were assigned to the project as the counterpart personnel.

List for Assignment of counterpart officials

Ministry	Organization name	Person in charge	Assignment
Ministry of Economy and Commerce	Ministry of Economy and Commerce	Ms. Ainura Usenbekova Duputy Minister of MoEC	Chairman of JCC
	Department of Technical Regulations and Metrology	Mr. Bakytbek Shadbanov Head of Department	Project Director
	Division of conformity assessment system regulation and halal-industry	Ms. Galiia Abdymomunova Head of Division	Project Manager
	Center for Standardization and Metrology, Bishkek center for certification and testing	Ms. Aigul Aksupova Head of testing laboratory of food and agricultural products	Project Manager
Ministry of Health	Department of Disease Prevention State Sanitary and Epidemiology Surveillance	Mr. Asylbek Sydykanov, Acting Director of Department of DPSSES	Deputy Director
	Department of Disease prevention State Sanitary and Epidemiology Surveillance	Ms. Aigul Dzhumakanova Head of Laboratory Testing Center	Project Manager
	Department of Disease prevention State Sanitary and Epidemiology Surveillance	Mr. Azamat Imakeev - Head of the Department of Food Hygiene	Project Manager
Veterinary Service (VS) under the Ministry of Agriculture, (Former S.I)	Veterinary Service (VS)	Mr. Ulugbek Kozhobergenov Director, VS	Deputy Director
	Veterinary Service (VS), State Veterinary Supervision Department	Ms. Gulmairam Iskembaeva Chief Inspector of the Department of Identification, Traceability of Animals and Animal Products	Project Manager
	Center for Veterinary Diagnostic and Expertise (CVDE)	Mr. Ermek Kurmankulov Head of Chemistry and Toxicology Department	Project Manager

**In January 2022, Name of relevant Ministries was changed under the structural reform of Government organizations.*

Number of task team member officers in each organization as of 22 Nov. 2023

Organization name	Laboratory team	HACCP team
DPSSES	14	9
VS, CVDE	9	9
CSM	9	---

I-2 Progress of Activities

Activities other than Outputs related

【JCC meeting in Phase I】

No.	Date	Agenda	Main points of discussion	Remarks
1st	July 29. 2019	Consultation of Work Plan	Necessity of involvement of private sector, regional laboratory/ inspection, and KCA were commented.	PDM and Monitoring sheet will be discussed in WG meeting.
2nd	Nov,29. 2019	PDM revision and project performance	Selection of trainers and the indicators of PDM were discussed.	JICA recommended to have presentation both from Japanese and C/Ps.
*	Nov,09.	Note: Replacing original schedule of JCC meeting, the project prepared and submitted the		

	2020	"**Activity Progress Report**" to the Ministry of Economy and Finance (MoEF) with having prior explanation to the project manager of MoEF by the expert through internet meeting system.		
3rd	June 8, 2021	Monitoring sheet, Project extension Activity achievement Future activity plan.	Extension of project period and project activity plan.	Not held in 2020 due to COVID-19 pandemic, (*See Note above)

【JCC meeting in Phase 2】

4th	Mar,23. 2022	Monitoring sheet, Phase2 activity plan Project achievements	Core activity components in Phase 2 and latest activity achievements (Lab & HACCP inspection trial)	Presentation to JCC by C/Ps was discussed in WG meeting on 11Mar,
5th	Nov.30 2022	Monitoring sheet, Approval of PDM revision, Recent project activity and future plan	Several achievements in practical trainings in Phase 2	Presentation of project activities to JCC by C/Ps
6th	May 26 2023	Monitoring sheet and project performance Report of terminal evaluation study	Project evaluation and recommendation from Terminal evaluation mission	Presentation of Technical training in Japan by participant
7th	Nov.29 2023	Monitoring sheet and project performance. Work products of the project	Several results of training activities Summary of work products and discussion on the future project idea	Presentation of Technical training in the full project period by C/Ps.

【Other Issues】

(1) Mr. Tanaka Hiroyuki, Director in charge of FLAQUM project in JICA H.Q made a courtesy call on MOE on 19 February, 2020. He had a short discussion with Project Director Mr. Bakytbek Shabdanov, and Director Mr. Hiroyuki Tanaka mentioned that JICA would consider an additional (2nd) C/P training in Japan.

(2) Advisory mission by JICA HQ

Mr. Suzuki Atsushi, the person in charge of FLAQUM project in JICA H.Q., carried out advisory mission to understand the project progress and to discuss the activity plan with all C/Ps from June 26 to July 1, 2022 in Bishkek. He recommended to review the indicators of PDM according to the actual project activities with the results of survey.

(3) Terminal Evaluation mission

Terminal evaluation mission team, headed by Ms. Kirino Yumi, carried out terminal evaluation study with Kyrgyz side evaluator from May 16 to May 29, 2023, to assess the effectiveness of the Project, to recommend actions to be taken by both Kyrgyz and Japanese to complete the Project, to explore a future cooperation plan for the Kyrgyz dairy sector by JICA, and to prepare a joint terminal evaluation report.

Activities related to Output 1 of PDM

(P.O 1.0) To conduct Baseline Survey (first six months after the commencement of the Project) and End-Line Survey (last three months before the end of the Project) for obtaining necessary information of planning and evaluation of the Project

Note) P.O. 1-0 = Activity number listed in the Plan of Operation (P.O)

【**Achievement**】*Following items were surveyed to carry out effective activities in the Project by Baseline Survey from May to September 2019. The survey report in Russian and English version were shared all C/P and JICA.*

Category	Survey items	Conducted by	Findings
Food safety laws and regulations	Update of EAEU regulations, Current status of food safety measures	Survey in Russia and Kazakhstan by local consultant	Risk factors were identified in dairy products.
Market data in the EAEU region	Export volume of dairy products to EAEU regions, And demand for food safety.	Survey in Russia and Kazakhstan by local consultant, and domestic survey by Japanese expert	Export amount to Russia is increasing.
Current state of the dairy industry	Number of companies declaring conformity and ISO22000 certification	Domestic survey by Japanese expert	Export-oriented companies have ISO22000.
Current status of C/P	Current status of laboratory management system, Aassessment of the capacity of regional laboratories, Capacity of farm or factory inspectors.	Task team meeting with C/P by Japanese expert Survey for laboratory activities by local consultant	Method validation should be improved for the conformity assessment.
Equipment information	Information of Equipment procurement from Russia, current status of existing equipment.	Task team meeting with C/P by Japanese expert	Equipment maintenance, method validation, SOP should be improved.

【**Achievement**】*Following items were surveyed to carry out EAEU Regulation and Market research in End-line Survey from August to October 2023. The survey report in Russian and English version were shared with all C/P and JICA.*

Category	Survey items	Conducted by	Findings
Market information in the EAEU region	Export volume of Kyrgyz dairy products, Demand for food safety in the markets	Domestic survey by Japanese marketing expert	Export volume is increasing to Russia, especially butter and cheese.
Current situations of the dairy industry	Number of companies declaring conformity and ISO22000 certification	Domestic survey by Japanese marketing expert	Production volume is increasing with the increase in the number of registered company.
Laws and regulations related to food safety	Update of food safety regulations in EAEU countries, Current status of risks related to food safety	Information collection Survey by local consultant	Regulatory system for securing the dairy products safety was reviewed
Present situation of laboratories in the Kyrgyz Republic	Comparison of laboratory capacity and service before and after the project, Present issues in the project and recommendations	Survey for laboratory activities by local consultant	Progress of laboratory capacity was evaluated from the point of the laboratory infrastructure.
Other donor projects in dairy sector	Recent program related to food safety and laboratory improvement	Information collection Survey by local consultant	There are several projects by PTB, FAO, World Bank, USAID in dairy sector.

(P.O 1.1) To establish Working Group (WG) in order to discuss and agree the roles of KIA, priorities of food testing items to be strengthened, training program of food testing staff and food factory inspectors and so on.

【**Achievement** 】 **(Records of WG meeting)**

Period	Main discussion points
May 2019 – August 2019	WG composed of PMs of all C/Ps was organized for the monthly discussion on key issues. TT composed of C/Ps including laboratory technicians, factory inspectors was organized in May 2019. And a series of discussions with experts were conducted for arrangement of activities.
September 2019 – November 2019	The revision of PDM draft (ver. 0.1 -> ver. 1.0) WG had a series of discussions on the revision of PDM. Their ideas and suggestions were reflected to the revised version 1.0
December 2019 – March 2020	Training in Japan for C/Ps. WG had a series of meeting on the training in Japan as scheduled in April 2020. After mid-January 2020, however, with notification of JICA's difficulty to accept the training in April, WG urgently discussed again and reset it to December in 2020.
April 2020 - December 2020	WG meeting in former style was not held under proliferation of COVID-19 infection. However, the project had discussions six (6) times with PMs and TT members during this period through internet conference system.
May 2021 - June 2021	WG meeting on 6 May, the member discussed on the arrangement of weekly training schedule from May, evaluation test for task team members, preparation of 3rd JCC including a nomination of counterpart's presentation, preparation of updated Monitoring Sheet, etc. WG meeting on 2 June, the member confirmed the draft Monitoring Sheet, presentation materials for JCC meeting, and discussed on one-year extension of project period.
October 2021 - November 2021	Considering to avoid a group meeting under the prevailing pandemic, in the middle of October,2021, the consultant team leader Mr. Ueno accompanied with Chief Advisor Mr. Hagiwara visited all project managers individually and explained the issues on the revised schedule of expert's assignment to the Kyrgyz up to March 2022, and detailed activity plan of chemical analysis expert and biological testing expert for the laboratories from the middle of October to the middle of November, etc.
February 2022 - March 2022	WG meeting on 16 Feb The team leader Mr. Ueno presented Work Plan for Phase 2 detailing key points of Lab and HACCP activities and their schedule. He also requested C/Ps to provide their presentation at the JCC meeting on the latest activity achievement. PM. Galiya (MOEC) asked other PMs to prepare their request matters to JICA. WG meeting on 11March The WG has discussed on the role of C/P for presentation at the 4th JCC meeting on the latest activity achievement.
April 2022 – October 2022	WG meeting on June 8 The chief advisor explained the purpose and schedule of JICA advisory mission with the request for accepting him to C/Ps. The project explained the tentative plan for the training in Japan. WG meeting on July 26 (in Bishkek), Aug. 9 and Sep.6 (by Zoom) The project discussed the revision of indicators in PDM with C/Ps with some additional information of logical frame and the structure of PDM by the team leader. WG meeting on Sep. 21 The project coordinator, Mr. Tonai, explain the document preparation and the tentative schedule for training in Japan to the participants. WG meeting on Oct. 18 The team leader, Mr. Ueno, discuss the revision of indicators with new PDM, the preparation of JCC meeting on Nov. 22, and the contents of training in Japan.
December 2022 – May 2023	(Technical Training in Japan) in February WG members, who participated the training in Japan, prepared the action plan based on the results of technical training. WG meeting on April 20 Explanation of activity schedule, terminal evaluation mission, and action plan.
June 2023 – December 2023	WG meeting on August 29 Explanation of project activities: End-line survey, Regional survey in Talas, Issyk-Kul and Technical training in Japan in October WG meeting on November 13

	Explanation of project activities: JCC meeting, Laboratory training, and Summary of final report WG meeting on December 7 Explanation and discussion on the Follow up activity

(P.O 1.2) To assess the development status of food safety regulation system from the view point of EAEU conformity, to discuss implementation gap by WG.

【Achievement】

- This issue (the differences of conformity of EAEU) was discussed with C/Ps during the baseline survey and its contents were reflected into the survey report.
- The laws and regulations related to the export of Kyrgyz dairy products were collected in second quarter of 2020 with a support of Ministry of Economy and Commerce (MoEC).
- The trainees of technical training in Japan visited administrative sites and received training on Japan's food safety policy and regulatory system during training programs held in February and October 2023. The trainees presented the direction for improving the food safety regulatory system in Kyrgyzstan as a result of their training.

(P.O 1.3) To summarize practical guidance for food testing and food factory inspection.

【Achievement】

- Since all food business operator in Japan are required to implement HACCP, various food industry associations have prepared product-specific "Guidelines for Hygiene Control of Food Production Incorporating the HACCP Concept" for small and medium-sized companies seeking to implement HACCP. Since the project aims to strengthen HACCP inspection in the production control of raw milk and dairy products, these guidelines were used as reference materials in the training, including the preparation of HACCP inspection check sheets and HACCP textbook.

【Achievement out of P.O activity list】

(*Monitoring survey is conducted in order to support a preparation of monitoring sheet.)

- The project conducted a monitoring survey to the C/P organizations in October 2019.

Activities related to Output 2 (for CVDE & VS) of PDM

(P.O 2.1) To develop and implement the training program of food factory inspection based on HACCP principle.

【Achievement】

1) Training program for HACCP inspection)

The expert of HACCP introduction has proposed to formulate the stratified training system such as "Basic" "Senior" "Trainer" depending on the technical and career level of inspectors.

Inspector	Program	Training contents	Training method	Expected period

level				
Trainer level	HACCP introduction to factory	HACCP plan,	Factory audit trial	Dec. 2021
		Factory audit based on HACCP principle	Preparation of Hygiene Control sheet	May and October 2021
	Sampling	Improving the sampling management and procedures	Provision of reference materials	June 2021
	International food safety regulations	ISO22000, FSSC22000 etc.	Provision of reference materials (Example as Food safety management in Japan)	(In Phase 2)
Senior level	HACCP basic	HACCP 7 principles	Remote training	October to November, 2020 February to March 2021
Basic level	Pre-requisite program (PRP)	Hygiene management and education, Pest control etc.	Practical training	June – July, 2021
	Food safety regulations	EAEU Technical Regulations	Preparation by C/Ps	June 2021
	Requirements for inspector	Inspection and sampling	Practical training	June – July 2021

2) Remote training program for farm/factory inspector.

HACCP Seven (7) principles are necessary and important for HACCP inspection by the inspector, because of the requirements of EAEU Technical Regulations for factory operation.

These trainings are effective preparation of field training to inspectors in Bishkek, Pre-requisite program training and factory inspection trial etc. ware implemented later with HACCP introduction expert, Mr. Hatano.

1st remote training for HACCP 7 principles Period: September – December,2020 by send training material with questions by email to each C/P ⇨	Meeting with C/P after 1st training ⇨	2nd remote training for follow-up 1st training Period: February – March, 2021 by Zoom conference with C/P
<Contents of Training> 1. Hazard analysis 2. Critical Control Points 3. Critical Limits 4. Monitoring Process 5. Corrective action 6. Verification and Validation 7. Record Keeping	<Comments from C/Ps> Training is interesting, but need face-to-face lectures with Q&A, and review the 1st training.	<Contents of Training> 1. Principle 1: Hazard Analysis 2. Principle 5: Corrective Action 3. Principle 6: Verification and Validation 4. Other optional training
Participants of the training: DPSSES (9), VS (9) Materials will be utilized for one of the future inspection training by the trainers.		

3) HACCP introduction using hygiene control sheet is undergoing.

The Training program design: the expert, Mr. Ueno, introduced “Hygiene Control Sheet” as the HACCP inspection tool, which was developed for HACCP sector-wise introduction in Japan.

Process operation using HACCP principles is controlled by following three steps:
1. To establish Hygiene Control Plan
2. To carry out Hygiene Control Plan
3. To record the data

In the group work of task team meeting, Mr. Ueno explained and request to prepare the Hygiene Control

Sheet for dairy products to prepare Kyrgyz own Hygiene Control Sheet in the future;
Daily cattle raising and milking, and milk collection center, Drinking milk, Ice cream, butter, and cheese.

(P.O 2.2) To develop Training of Trainer (TOT) program for food factory inspection.

【Achievement】

The training program for trainer level has been developed with the team leader training in the task team workshop for factory inspection

- Information collection for factory inspection activities
  - Existing checklist for factory inspection and inspection manual
  - Actual inspection flow of inspector
  - "Manual of HACCP introduction for small-scale-enterprises" by IFC/Belarus
- Preparation of training material based on following materials
  - Sample of HACCP Plan for dairy production
  - HACCP Principle 6: Presentation on the verification procedure

(P.O 2.3) To conduct training of Trainer (TOT)

【Achievement】

1) HACCP Plan preparation exercise (Group work)
2) Lecture and exercise for Pre-requisite program (staff training)
3) Candidate trainers in the task team member are selected as follows;

	Senior trainer	Young trainer	Others
VS	2	2	4
DPSSES	7	0	2

(P.O 2.4) To try food factory inspection based on HACCP principle

【Achievement】

1) 1st factory inspection trial

This activity started after selecting the factories for inspection trial.
The factory inspection trials for inspectors have been carried out for two (2) dairy processing companies as TOT training. (One factory for HACCP not yet installed, the other one for HACCP already installed).

1st visit

	VS	DPSSES
Date	Feb. 24, 2022	Feb. 25, 2022
Company name	Sutash	Artezian
Target Product	Cheese (Holland cheese)	Cheese (Cottage)
Participants	6 (Task team)+2 (MOEC) +2 (JICA) +5 (Project)	9 (Task team) + 2 (MOEC) +5 (Project)
HACCP	Not yet installed	Not yet installed
Review meeting	Mar. 1, 2022	Mar. 1, 2022

2nd visit

	VS	DPSSES
Date	Mar. 3, 2022	Mar. 4, 2022
Company name	Kant Sut	Semeinya Tradicii
Target Product	Milk	Cottage cheese,
Participants	7 (Task team) + 5 (Project)	9 (Task team) +2 (Project)
HACCP	ISO22000	ISO22000
Review meeting	Mar. 9, 2022	Mar. 10, 2022

The results of 1st inspection trial are as follows;

- Task team members could accumulate the management experience through the factory inspection trials from both HACCP installed and not yet installed.
- Task team members could meet the inspection standards by sharing several issues which were found in the factories through the review meeting.
- Important points of inspection methods and procedures through the actual training were learned by the young inspectors, who could not experience the factory inspection because of moratorium measures.

2) HACCP training to the staff of the cooperate factories by task team members as TOT training

Each task team members provided the HACCP training to the factory which has been conducted 1st inspection trial and HACCP has not been installed.

	VS	DPSSES
Date	July 18-19, 2022	July 12-14,k 2022
Participants	2 person from Sutash company	3 persons from Artezian company
Target Product	Cheese (Holland cheese)	Cheese (Cottage)
Lecturers	4 task team members	8 task team members

3) Regional inspector training needs survey of VS in Chui region

Date & Time	August 5, 2022 10:45 – 12:45
Target	VS Issyk-Ata region branch office
Participants	VS: Director and VS inspectors (5), HQ Chief inspector (1) Project: Experts (2), Assistants (2)
Survey results	In the region, they have never received HACCP training. In case of introducing Farm HACCP, the hygiene training at the level of breeding management level will be useful in this area.

4) 2nd factory inspection trial

	VS	DPSSES
Date	Nov. 24, 2022	Nov. 15, 2022
Factory	Sutash	Artezian
Target Product	Cheese (Holland cheese)	Cheese (Cottage)
Participants	6 (Task team) + 5 (Project)	9 (Task team) +5 (Project)
HACCP	Not yet installed	Not yet installed

5) VS inspector training in dairy farm

Date & Time	January 17, 2023 (Tue) 9:30 – 13:00
Place	Sokuluk district in Chui region, Dairy farm

Participants	VS: Task team members (6), Regional inspectors (4) Project: Experts (1), Assistants (1)
Training program	Training for improving the inspection capacity in dairy farm for VS inspectors

6) Preparation of training in the milk collection center

Date & Time	June 16, 2023 (Fri) 10:00 – 12:00
Place	Sokuluk district in Chui region, Milk collection center
Participants	Milk collection center: Director and staff (7) Project: Experts (1)
Training program	Request for training such as operation inspection using check sheet in the milk collection center

7) Preparation of training in small cheese factory

Date & Time	June 29, 2023 (Tue) 13:00 – 15:00
Place	Sokuluk district in Chui region, Cheese factory
Participants	Cheese factory(Director, staff(3)), Chairman of dairy union Project: Experts (1), Assistants (1)
Training program	Request for training such as operation inspection using check sheet in the cheese factory

(P.O 2.5) To establish food factory inspector training system with TOT program.

【Achievement】

1) HACCP inspector training program was developed and implemented as follows;
   - HACCP trainings for the regional inspectors in Chui region was carried out as TOT training
   - HACCP trainings for dairy factory staffs in Chui region was carried out as TOT training.
2) Inspector training system will be improved through the factory inspection etc.
3) HACCP training needs survey in the regions (VS)

   Based on the requests from C/Ps for expanding the project period and target area, project conducted the training needs survey in the regions as follows;

	Osh	Talas	Iskyk-Kul
Period	April 24 – 27, 2023	July 4 – 7, 2023	September 13 – 16, 2023
Place	Osh VS office, Dairy factory	Kara-Buura VS office, farm, milk collection center, dairy factory	Jety Oguz VS office, Dairy farm, milk collection center
Survey results	Market of dairy products in Osh is only domestic, the hygiene training should be provide both inspectors and dairy companies.	Not enough HACCP training and training should provide not only inspectors, but also private sector.	It is necessary to formulate farmer group and to support hygiene control for improving milk quality.

4) Development of HACCP training manual for VS inspector

Project counterparts prepared "Manual on Food Hygiene in the field of veterinary and sanitary requirements for the inspectors on VS under the Ministry of Agriculture of the Kyrgyz Republic",

utilizing the results of HACCP training. It is expected to be used as a training material for regional inspectors in the future.

(P.O 2.6) To improve the Internal Quality Control (for Laboratory testing)

【Achievement】

1) The laboratory survey by Internal Quality Control Expert, Mr. Terunuma, was conducted to understand the present situations of internal quality control and to identify the necessity of technical assistance as follows:
(Main survey points are the management of equipment, chemicals, method, operation, method validation, and internal quality control.)

Date	Laboratory name	Target methods	Recommendations
August 14, 2019	CVDE(Bishkek)	Lead in milk (AAS)	CVDE has appropriate laboratory management, but it is necessary to improve the method validation.
August 21-22, 2019		Organochlorine pesticides in milk (GC)	
December 4, 2019	CVDE (Osh)	Cd in powder milk (AAS)	It is recommended to measure from the calibration curve solution to the sample solution at once as possible as possible after the AAS stabilize.

2) The expert provided a seminar for introduction of International and Japanese guidance for the international quality control, US guidance for Standard Operating Procedure (SOP).
3) As one of collaboration activities among laboratories, the project arranged a meeting for information sharing of SOP preparation for laboratories. The meeting was held on 25 Feb, 2020 at DPSSES and CVDE has introduced SOP preparation procedure based on the CVDE's achievement and experience.
4) Internal Quality Control Expert, Mr. Terunuma, conducted laboratory internal audit as international auditor, to assess the compliance with the requirements of ISO/IEC 17025, as a case of Atomic Absorption Spectroscopy test method for heavy metals in food.

(P.O 2.7) To develop and conduct testing technology which fit for purpose

【Achievement】

1) Testing technology for the Chemical Analysis

・Chemical Analysis Expert, Mr. Nagata, has started laboratory training activities from 17 May, 2021 after checking existing testing methods with main equipment and requests from C/Ps. He considers the training plan to improve the laboratory activity through his support.

・Existing major equipment and main analytical parameters to be used for the technical instruction by the experts to the laboratory counterparts are as follows;

Major equipment	Atomic Absorption (AAS)	Liquid Chromatograph (LC, LC-MS/MS)	Gas Chromatograph (GC, GC/MS)
Brand	Shimadzu	Shimadzu	Shimadzu
Analytical parameters	Heavy metals	Antibiotics, Aflatoxin	Pesticides

Mr. Nagata transferred the technologies to use equipment effectively through equipment stabilization and maintenance based on requests of the laboratory as follows:

Date	Main training items	Results and achievement
May and June, 2021	Improving the operation for GC, GC-MS, LC-MS/MS	GC-MS sensitivity was up by tuning.
May and June, 2022	Trouble shooting and maintenance for GC, GC-MS	Low sensitivity of MS was improved.
Sep. and Oct. 2022	Trouble shooting and maintenance for GC, GC-MS	Plunger error was found by the dirty from sample.

2) Testing technology for microbiology testing

・The assignment of microbiological expert, Mr. Ozono, to the Kyrgyz was one month from the middle of August to September 2021.

・The assignment of microbiological expert, Mr. Iizuka, to the Kyrgyz was one month from the middle of May to June 2022, as a successor of Mt. Ozono.

・Mr. Iizuka provide a series of internal quality control training for microbiological testing.

(P.O 2.8) To develop and conduct testing technology with verified or validated method

【Achievement】

SOP	Method	Equipment
SOP-14-2019	Validation of the analytical method for the quantitative determination of analytes being determined.	AAS*
SOP-15-2019	Sample preparation of animal products (milk, meat, honey) using the QuEChERS extraction and purification system, to determine the residual content of chloramphenicol (levomycetin) by HPLC-MS / MS method according to GOST 54904-2019	HPLC*
SOP-16-2019	Determination of residual aflatoxin M1 in whole milk. Purification by immune-affinity chromatography and determination by HPLC.	HPLC

* AAS: Atomic Absorption Spectroscopy
HPLC: High Performance Liquid Chromatography

Mr. Nagata transferred the technologies for method validation to improve the analytical reliability based on requests of the laboratory as follows:

Date	Main training items	Results and achievement
May and June, 2021	Pesticide residue analysis by GC	SOP of Pesticide analysis by QUECHERS was confirmed.
Oct. and Nov. 2021	Measurement conditions for HPLC and LC-MS/MS	Measurement conditions LC using Aflatoxin M1 standard solution was confirmed.
May and June 2022	Pesticide residue analysis by GC	The recovery ratio increased in the spike test.
Sep. and Oct. 2022	Pesticide residue analysis by GC and GC-MS	Sensitivity and linearity of calibration curve was confirmed for new parameters.
May – Nov. 2023	Effective use of LC-MS/MS and GC-MS	Perform tuning, Optimize MS and LC conditions, Training of GC-MS operation

・The assignment of microbiological expert, Mr. Ozono, to the Kyrgyz was one month from the

middle of August to September 2021.

・The assignment of microbiological expert, Mr. Iizuka, to the Kyrgyz was one month from the middle of May to June 2022, as a successor of Mt. Ozono.

・Mr. Iizuka provide a series of internal quality control training for microbiological testing.

(P.O 2.9) To improve technical ability and utilization of uncertainty assessment

【Achievement】

1) Remote training program for the laboratory technicians.

These training can be effective preparation of field training to laboratory technicians in Bishkek, Equipment maintenance and method development training etc, has been implemented later under instruction of chemical analysis expert, Mr. Nagata.

1st remote training for Statistics in laboratory Period: October – December, 2020 by sending training material with exercise by email to each C/P	Meeting with C/P after 1st training	2nd remote training for measurement uncertainty Period: February – March, 2021 by send training material with exercise by email to each C/P
<Contents of Training> 1. Statistics for analytical data 2. Detection of Outliers 3. Test and estimation 4. Regression Analysis 5. Uncertainty	<Comments from C/Ps> Training is effective for laboratory activity	<Contents of Training> 1. What is Uncertainty 2. Uncertainty in Atomic Absorption 3. Uncertainty in HPLC 4. Uncertainty in Microbiological testing
Participants of the training: CVDE (7), DPSSES (8), CSM (6) Excel operation training was carried out in May 2021, by Mr. Ueno, to understand how to use Excel in the laboratory work with exercise in each laboratory.		

2) This activity in Kyrgyz was implemented in second and third quarter of 2021 and 2022 by the chemical analysis expert, Mr. Nagata, and microbiological expert, Mr. Ozono.

(P.O 2.10) To develop laboratory staff training program with TOT system

【Achievement】:

1) A series of discussion and formulation of draft training program for laboratory technicians was carried out by the expert team from May to August 2020 as one of domestic work in Japan during COVID-19 pandemic.
2) The expert developed the self-learning materials on statistical analysis inclusive of 5 technical programs. Those materials were distributed to laboratory technicians to be used in distance training.
3) Remote training on statistical analytical data for laboratory technicians was conducted 18 times from October 2020 to March 2021 to strengthen the knowledge and technique for statistics and data processing. This training aimed a practical exercise for C/Ps.
4) The project planned to introduce the periodic technical level qualification test given to the technicians that classify "Level 1 to Level 8". This practice could be a good incentive for the C/Ps to upgrade their capacities stepwise.

Step	Laboratory technique	Quality Control and statistics	ASS	GC, GC/MS	LC, LC/MS	Remarks
1	Washing techniques Solution preparation	Significant number Decision of Outliers				
2	Using pure water	Shewhart control chart Equipment/chemical list				Basic level
3	Sample preparation	SOP preparation and improvement				
4	Waste treatment	Storage of SOP				Trainer level for region
5	Equipment operation	Planning IQC and ISO17025	Equipment operation and maintenance	Equipment operation and maintenance	Equipment operation and maintenance	
6		Cusum chart	Method search	Method search	Method search	
7		Method validation and uncertainty	Condition setting of equipment Recovery test and method validation Proficiency testing,	Condition setting of equipment Recovery test and method validation Proficiency testing,	Condition setting of equipment Recovery test and method validation Proficiency testing,	
8		Inter-laboratory comparison	Method development	Method Development	Method Development	Trainer level of central

5) Base-line test for finding the technical subjects which the project should emphasize in the training:
In the middle of May, the test for laboratory technicians and farm/factory inspectors was carried out for considering the improvement and strengthening points which the project will take more emphasis in the trainings based on the understanding the knowledge and technology of the C/Ps. The method of the test is to send the question of examination to individual counterpart by email, and to have answers returned to the project for scoring. The results of the test are under analyzing by the project.

The number of participants for the Base-line tests are as follows;

	CVDE, VS	DPSSES	CSM
Laboratory	5/10	7/13	6/10
HACCP inspection	10/10	9/10	---

6) Laboratory technician skill map and comprehension test
Japanese experts prepared the laboratory technician skill map to evaluate the capacity of testing technique and knowledge for each technician after the individual training. And the experts took comprehension tests to check the understanding after training.

Activities related to Output 3 (for DPSSES) of PDM

(P.O 3.1) To develop and implement the training program of food factory inspection based on HACCP principle

【Achievement】

1) This activity can be covered by the description shown in the achievement of (P.O.2.1)

(P.O 3.2) To develop the Training of Trainer (TOT) program for food factory inspection

【Achievement】

1) This activity can be covered by the above description shown in the achievement of (P.O.2.2)

(P.O 3.3) To conduct training of Trainer (TOT)

【Achievement】

1) This activity can be covered by the above description shown in the achievement of (P.O. 2

(P.O 3.4) To try food factory inspection based on HACCP principle.

【Achievement】:

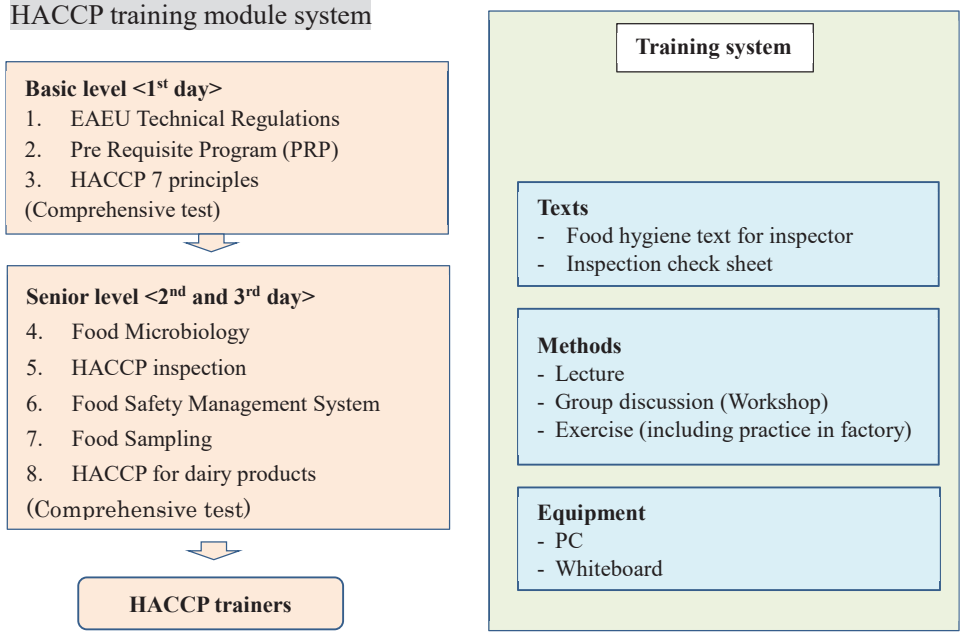
1) This activity can be covered by the above description shown in the achievement of (P.O. 2.4)

(P.O 3.5) To establish food factory inspector training system with TOT program

【Achievement】

1) The training module system has been developed by trainers in collaboration with the project expert before implementation of inspector training. Inspector training system will be improved through the factory inspection etc.

2) HACCP training module system



Based on the training module system, HACCP training for the regional inspectors of DPSSES in Chui region as TOT training has been conducted.

a. Beginner level regional inspector training

Date & Time	July 27 – 28, 2022 (2 days) 9:30 – 14:00
Organization	DPSSES
Target	20 members of regional inspectors in Chui region
Training contents	EAEU food hygiene regulations, PRP, HACCP 12 steps and 7 principles Exercise: Preparation of Production flow, Hazard Analysis, HACCP Plan

Based on the results of comprehension test at the end of training, the senior level trainees were selected.

b. Senior level regional inspector training

Date & Time	November 10 – 11, 2022 (2 days) 9:30 – 16:30
Organization	DPSSES
Target	5 members of regional inspectors in Chui region
Training contents	HACCP inspection, HACCP for milk and dairy products, Traceability, Factory layout and Zoning, Food Microbiology, Food safety management system, Food sampling

3) **HACCP training needs survey in the region (DPSSES)**

Based on the requests from C/Ps for expanding the project period and target area, project conducted the training needs survey in the regions as follows

	Talas
Period	August 8-11,2023
Place	Talas DPSSES office, Laboratory, Dairy factory (Taras Daamy, Taras Sut)
Survey results	Not enough HACCP training and training should provide not only inspectors, but also private sector. In the model area

(P.O 3.6) To develop the stepwise training system from improvement of HACCP introduction to food safety certification

【Achievement】

DPSSES task team members understand the effectiveness and necessity of the stepwise training system through the HACCP training by the project, especially the training in Japan. They will consider to develop the stepwise training system to encourage food companies to obtain the food safety certification such as ISO22000 and FSSC22000 in the future in the future.

(P.O 3.7) To establish Food Safety Management System (FSMS)

【Achievement】

HACCP task team members understand the necessity of supporting system for the food companies to introduce ISO22000/FSSC22000 etc. to expand the food export to foreign countries through the training in Japan. They consider to improve regulatory system, such as mandatory HACCP system and training program of ISO22000 for food companies.

(P.O 3.8) To improve the Internal Quality Control

【Achievement】

The laboratory survey by Internal Quality Control Expert, Mr. Terunuma, was conducted to understand the present situations of internal quality control and to identify the necessity of technical assistance as follows:

(Main survey points are the management of equipment, chemicals, method, operation, method validation, and internal quality control.)

Date	Laboratory name	Target methods	Recommendations
August 15, 2019	DPSSES (Bishkek)	Lead/Cd in food (Voltammetry)	DBSSES has appropriate laboratory management, but it is necessary to verify the method in the laboratory.
August 20, 2019		Chloramphenicol in milk(HPLC)	
December 2-3, 2019	DPSSES (Osh)	Cd in food (Voltammetry) Hardness in drinking water (Titration method)	Careful operation of the micropipette may reduce the variation in values.

Internal Quality Control Expert, Mr. Terunuma, conducted laboratory internal audit as international auditor, to assess the compliance with the requirements of ISO/IEC 17025, as a case of Atomic Absorption Spectroscopy test method for heavy metals in food.

(P.O 3.9) To develop and conduct testing technology which fit for purpose

【Achievement】

1) Testing technology for the Chemical Analysis

Chemical Analysis Expert, Mr. Nagata, has started laboratory training activities from 17 May, 2021 after checking existing testing methods with main equipment and requests from C/Ps.
He considers the training plan to improve the laboratory activity through the support by experts.
Existing major equipment and main analytical parameters are as follows;

Major equipment	Atomic Absorption (AAS)	Liquid Chromatograph (LC)	Gas Chromatograph (GC, GC/MS)
Brand	Shimadzu	Shimadzu	Shimadzu, Agilent
Analytical parameters	Heavy metals	Antibiotics, Aflatoxin	Pesticides

Mr. Nagata transferred the technologies to use equipment effectively through equipment stabilization and maintenance based on requests of the laboratory as follows:

Date	Main training items	Results and achievement
May and June, 2021	Improving the operation for HPLC	Understanding data analysis by using new HPLC (Shimadzu)
Oct. and Nov., 2021	Determination of 2,4-D by GC-ECD	After maintaining GC inlet, it was finally determined.
Sep. and Oct. 2022	Determination of sugar in honey by HPLC	Before no laboratory can analyze sugar in Kyrgyz, now Kyrgyz laboratory can analyze by herself.

Testing technology for microbiology testing

- The assignment of microbiological expert, Mr. Ozono, to the Kyrgyz was one month from the middle of August to September 2021.
- The assignment of microbiological expert, Mr. Iizuka, to the Kyrgyz was one month from the middle of May to June 2022, as a successor of Mt. Ozono.
- Mr. Iizuka provide a series of internal quality control training for microbiological testing.

(P.O 3.10) To develop and conduct testing technology with verified or validated method

【Achievement】

1) Testing technology for the Chemical Analysis

Mr. Nagata transferred the technologies for method validation to improve the analytical reliability based on requests of the laboratory as follows:

Date	Main training items	Results and achievement
May and June, 2021	Aflatoxin analysis by HPLC	By using centrifuge for extraction, it improve the recovery ratio and shorten the time.
Oct. and Nov., 2021	Tetracycline analysis by HPLC	After changing mobile phase composition, it can be determined.
Sep. and Oct. 2022	Vitamin B1, B2 analysis by HPLC	It was the first time for DPSSES to analyze Vitamin B1 and B2 by HPLC
May – Nov. 2023	Effective use of LC-MS/MS	Optimization of MS and LC conditions; and preparation of LC protocols.

2) Testing technology for microbiology testing

・The assignment of microbiological expert, Mr. Ozono, to the Kyrgyz was one month from the middle of August to September 2021.

・The assignment of microbiological expert, Mr. Iizuka, to the Kyrgyz was one month from the middle of May to June 2022, as a successor of Mt. Ozono.

・Mr. Iizuka provide a series of internal quality control training for microbiological testing.

(P.O 3.11) To improve technical ability and utilization of uncertainty assessment

【Achievement】

1) This activity is the same as the description shown in the achievement of (P.O.2-9)

(P.O 3.12) To develop laboratory staff training program with TOT system

【Achievement】:

1) This activity is the same as the description shown in the achievement of (P.O 2.10)

Activities related to Output 4 (for CSM) of PDM

(P.O 4.1) To improve the Internal Quality Control

【Achievement】

This activity is the same as the description shown in the achievement (P.O.2.6).

The laboratory survey by Internal Quality Control Expert, Mr. Terunuma, was conducted to understand the present situations of internal quality control and to identify the necessity of technical assistance as follows:

(Main survey points are the management of equipment, chemicals, method, operation, method validation, and internal quality control.)

Date	Laboratory name	Target methods	Recommendations
August 16, 2019	CSM (Bishkek)	Water content in Cheese	CSM has appropriate laboratory management, but validation methods need to be improved.
August 23, 2019		Lead/Cd in mineral water (Voltammetry)	

Internal Quality Control Expert, Mr. Terunuma, conducted laboratory internal audit as international auditor, to assess the compliance with the requirements of ISO/IEC 17025, as a case of Atomic Absorption Spectroscopy test method for heavy metals in food.

(P.O 4.2) <u>To develop and conduct testing technology which fit for purpose</u>

【Achievement】

1) Testing Technology for Chemical Analysis

Chemical Analysis Expert, Mr. Nagata, has started laboratory training activities from 17 May, 2021 after checking existing testing methods with main equipment and requests from C/Ps.
Appropriate methods will be presented through training by the experts.
Existing major equipment and main analytical parameters are as follows;

Major equipment	Induced Coupled Plasma (ICP)	Liquid Chromatograph (LC, LC-MS)	Gas Chromatograph (GC, GC/MS)
Brand	Thermo-Scientific	Thermo-Scientific	Thermo-Scientific, Russian
Analytical parameters	Heavy metals	Antibiotics, Aflatoxin	Pesticides

Mr. Nagata transferred the technologies to use equipment effectively through equipment stabilization and maintenance based on requests of the laboratory as follows:

Date	Main training items	Results and achievement
May and June, 2021	Operation of GC-ECD	Determination condition of GC for pesticides is confirmed.
Oct. and Nov. 2021	Operation of radiation measuring devise	Cesium was determined with new equipment.
May and June 2022	Operation of Soxhlet equipment for fat content analysis	Practical check points were instructied.

2) Testing technology for microbiology testing

・The assignment of microbiological expert, Mr. Ozono, to the Kyrgyz was one month from the middle of August to September 2021.

・The assignment of microbiological expert, Mr. Iizuka, to the Kyrgyz was one month from the middle of May to June 2022, as a successor of Mt. Ozono.

・Mr. Iizuka provide a series of internal quality control training for microbiological testing.

(P.O 4.3) To develop and conduct testing technology with verified or validated method

【Achievement】

1) Testing Technology for Chemical Analysis

Mr. Nagata transferred the technologies for method validation to improve the analytical reliability based on requests of the laboratory as follows:

Date	Main training items	Results and achievement
Oct. and Nov.2021	Operation of radiation measuring device	Validation of equipment was conducted through the radiation source.
May and June. 2022	Operation of Soxhlet equipment for fat analysis	Important points of measuring sample was understood.
May – June 2023	Effective use of LC-MS/MS	Optimization of MS and LC conditions, and preparation of LC protocols.

2) Testing technology for microbiology testing

・The assignment of microbiological expert, Mr. Ozono, to the Kyrgyz was one month from the middle of August to September 2021.

・The assignment of microbiological expert, Mr. Iizuka, to the Kyrgyz was one month from the middle of May to June 2022, as a successor of Mt. Ozono.

・Mr. Iizuka provide a series of internal quality control training for microbiological testing.

(P.O 4.4) To improve technical ability and utilization of uncertainty assessment

【Achievement】

1) This activity is the same as the description shown in the achievement of (P.O.2-9)

(P.O 4.5) To develop laboratory staff training program with TOT system

【Achievement】

1) This activity is the same as the description shown in the achievement of (P.O 2.10)

I-3 Achievement of Output

Output 1:
Implementing agencies discuss and agree the detailed Project activities and implementation structure.

Verifiable Indicator.

1. The agreement among counterparts includes following contents;

1) The collaboration among all C/Ps in the Project activities

【Achievement】 (by October 2019)

・Inter-laboratory comparison tests implemented between CSM and DPSSES using powder milk samples as standard material for nutrition analysis in Japan.

・As an achievement of collaboration among C/P organizations, Project Manager of CVDE introduced the SOP samples prepared by CVDE to C/Ps of DPSSES and CSM on 2 Feb,2020

2) **Departmental 3-years Human Resource Development training plan and a training program will be prepared and approved by the head of related agencies and be implemented after project termination**

【Achievement】

Ministry of Economy and Commerce gave order all Project Manager at the WG meeting to submit the departmental 3-years Human Resource Development training plan before the 7th JCC meeting.

Followings are the summary of 3-year Human Resource Development training plan from each department.

< Lab group>

	CVDE	DPSSES	CSM
Title of the plan	Training on HPLC, LC-MS/MS, GC, GC/MS, AAS, ELISA	Training on HPLC, LC-MS/MS, GC, GC/MS, AAS, ELISA, ICP-MS	Testing laboratory external and internal training plan Practical training on the implementation of method validation of methods.
Main purpose	Increasing the level of professional competence of personnel. Introduction of new methods/methods of testing, allowing to expand the range of determined safety indicators of food raw materials of animal origin, subject to control	Increasing the laboratory's capacity to harmonize/standardize laboratory testing methods with an expanded range of tests	Practical training on the implementation of methods and validation of methods.
Main targets and activities	− Satisfying the needs of entrepreneurs of the Kyrgyz Republic in terms of determining the safety indicators of food raw materials of animal origin entering the domestic market and exported to the EAEU countries. − Determination of safety indicators for food raw materials of animal origin in accordance with the requirements of the CU TR.	− Further improvement and improvement of the quality management system in laboratory in accordance with the current international standard ISO/IEC 17025. − Training of laboratory specialists − Regular participation in Inter-laboratory comparison test and Proficiency testing.	Implementation of methods; − MS method for determining antibiotics in dairy products; − PCR analysis of GMOs in dairy products; − GC method for determining the fatty acid composition of dairy products; − Conducting tests for compliance with the requirements of technical regulations of the EAEU

<HACCP group>

	DPSSES	VS
Title of	Training plan for the specialists from regions of	Training Plan of regional veterinary inspectors of

the plan	DPSSES for the inspection of the manufacturers engaged in the production and processing milk and dairy products for the implementation of the HACCP system.	the Veterinary Service according to HACCP inspection at farm, milk collection points and food enterprise on the veterinary and sanitary requirements 2024-2026
Main purpose	Expanding knowledge of the HACCP system though training as an inspector and instructor. Strengthening training abilities and gaining experience in conducting training as a trainer on the implementation of the HACCP system in the food industry.	Improve the capacity of regional veterinary inspectors to promote HACCP implementation in the region.
Main targets and activities	Training module and program <Basic level> 1. Technical regulations of EAEU 2. Prerequisite Program (PRP) 3. HACCP 7 principles and HACCP Plan <Senior level> 1. Food microbiology 2. HACCP inspection 3. Food safety management system such as ISO22000 4. Food sampling 5. HACCP for dairy products	− Theoretical seminars and trainings on HACCP inspection − Practical training seminar on HACCP inspection using the example of one farm, milk collection point and food enterprise − Familiarization with the HACCP inspection Guide, Checklists for the farm, milk collection point and food enterprise − Work with documents for HACCP inspection of a farm, milk collection point and food enterprise, in accordance with veterinary and sanitary requirements.

Output 2：
The system to assess the conformity for safety of raw milk and manufacturing process by CVDE, VS and its RFTCs from the viewpoints of technology and human resource is developed.

Verifiable Indicator

1. **More than 50% of them obtain satisfactory level of skills as a competent technician.**
2. **Laboratory management is improved to update the new version of ISO/IEC17025.**
3. **HACCP inspection training program is developed, and improved through the training in the factory, and approved by the head of VS under the Ministry of Agriculture of the Kyrgyz Republic.**
4. **The trial food factory inspection is designed and executed.**
5. **TOT program is designed and executed.**

【Achievement corresponding to above indicators】

1. Project has focused to provide practical trainings of method validation in the laboratory operation, because existing chemists have enough knowledge and technology from level 1 to 7 in the Qualification system (refer to【PO. 2.10】). And they need more practical training of method validation even though they have theoretical knowledge of method validation. Level Seven (7) is a target of FLAQUM project.

   And in CVDE laboratory, the number of chemist who have actually received the training of validation, and understand its knowledge and carry out practice in the laboratory, and who obtain satisfactory level of skills as a competent technician.is 7/9 = 77.8% (over 50%).

2. In the end of March 2020, CVDE has successfully acquired the certification of ISO/IEC17025 (2017 New version) from Kyrgyz Center for Accreditation (KCA).

3. First draft of HACCP inspection training program including basic, senior and trainer levels was formulated.
4. The training material and check sheet was improved through the factory inspection.
5. The trial factory inspection was designed and executed. (second times)
6. TOT program was designed and executed.

Output 3:

The system to assess the conformity for safety of milk, dairy products and manufacturing process by DPSSES and its RFTCs from the viewpoints of technology and human resource is developed.

Verifiable Indicator

1. **More than 60% of them obtain satisfactory level of skills as a competent technician**
2. **Laboratory management is improved to update the new version of ISO/IEC17025.**
3. **HACCP inspection training program is developed, and improved through the training in the factory, and approved by the head of DPSSES under the Ministry of Health of the Kyrgyz Republic.**
4. **The trial food factory inspection is designed and executed.**
5. **TOT program is designed and executed.**

【Achievements corresponding to above indicators】

1. Project has focused to provide practical trainings of method validation in the laboratory operation, because existing chemists have enough knowledge and technology from level 1 to 7 in the Qualification system (refer to【PO. 2.10】). And they need more practical training of method validation even though they have theoretical knowledge of method validation. Level Seven (7) is a target of FLAQUM project.

   And in DPSSES laboratory, the number of chemist who have actually received the training of validation, and understand its knowledge and carry out practice in the laboratory, and who obtain satisfactory level of skills as a competent technician.is 10/14 = 71.4% (over 60%).
2. DPSSES is currently under review the new version of ISO/IEC17025 by KCA on January 2021.
3. First draft of HACCP inspection training program including basic, senior and trainer levels was formulated.
4. The training material and check sheet was improving through the factory inspection.
5. The trial factory inspection was designed and executed. (second times)
6. TOT program was designed and executed.

Output 4:

The system to assess the conformity for quality of milk, dairy products by CSM and its RFTCs from the viewpoints of technology and human resource is developed.

Verifiable Indicator

1. **More than 70% of them obtain satisfactory level of skills as a competent technician**

2. Laboratory management is improved to update the new version of ISO/IEC17025.

【Achievements corresponding to above indicators】

1. Project has focused to provide practical trainings of method validation in the laboratory operation, because existing chemists have enough knowledge and technology from level 1 to 7 in the Qualification system (refer to【PO. 2.10】). And they need more practical training of method validation even though they have theoretical knowledge of method validation. Level Seven (7) is a target of FLAQUM project.

   And in CSM laboratory, the number of chemist who have actually received the training of validation, and understand its knowledge and carry out practice in the laboratory, and who obtain satisfactory level of skills as a competent technician.is 7/9 = 77.8% (over 70%).

2. CSM acquired a new version of ISO/IEC17025 (the certificate was issued on 02 March 2020)

I-4 Achievement of the Project Purpose

Verifiable Indicator:

1. **Number of reliable methods with validation/verification during project period through the project activities increase 10%.**
2. **Necessary number of management documents to improve laboratory management increases through the project activities.**
3. **Check sheet for Factory inspection including HACCP contents is developed and approved by Ministry of Economy and Commerce**

【Achievements corresponding to above indicators】

1. Number comparison of analytical method with validation before and present status in milk/daily products. (Laboratories can analyze several parameters using below additional analytical methods through the efforts of each laboratory with project activities.)

CVDE

	Before the project Year 2018	Year 2022	End of Year 20233
Antibiotics	2 (ELISA)	7 (ELISA, LC-MS)	7 (ELISA, HPLS-MS)
Mycotoxin	-	1 (HPLC)	2 (HPLC)
Heavy metal	-	4 (AA)	4 (AAC)
Pesticide	-	6 (GC, GC-MS)	6 OHP (GC, GC-MS)
Acidity	-	1	1
Gravity	-	1	1
Fat content	-	1	1

DPSSES

	Before the project Year 2018	Year 2022	End of Year 2023
Antibiotics	-	7 (ELISA, HPLC)	6 (HPLC-MS)

Mycotoxin	1 (TLC)	2 (HPLC)	2 (HPLC)
Heavy metal	5 (Voltammetry, calorimetry, AA)	7 (AA, Voltammetry)	7 (AA, Voltammetry)
Pesticide	1 (TLC)	6 (GC)	6 (GC)
Acidity	1 (Titrimetric)	1 (Titrimetric)	1 (Titrimetric)
Melamine	1 (HPLC)	1 (HPLC)	1 (HPLC)
Benzopyrene	1 (HPLC)	1 (HPLC)	1 (HPLC)
Trans fatty acid isomers	--	4 (GC)	4 (GC)
Milk fat in butter	--	1 (Titrimetric)	1 (Titrimetric)
Sorbic and benzoic acids	-	-	2 (HPLC)
Vitamins A, B1, B2	-	3 (HPLC)	3 (HPLC)

CSM

	Before the project Year 2018	Year 2022	End of Year 2023
Antibiotics	0	1 (HPLC)	1 (HPLC)
Mycotoxin	1 (TLC)	1 (HPLC)	1 (HPLC)
Heavy metal	2 (Voltammetry, calorimetry)	12 (ICP)	12 (ICP)
Pesticide	1 (TLC)	2 (GC)	2 (GC)
Acidity	1 (Titrimetric)	1 (Titrimetric)	1 (Titrimetric)
Gravity	1	1	1
Fat content	1	1 (Soxhlet)	1 (Soxslet)
Moisture	1	1	1
Total Nitrogen	1	1	
Radionuclide	0	2 (Radio meter)	
Microbiology	4	6	

2. The relevant data is to be prepared in the end of respective year.

3. First version of check sheet for factory inspection including HACCP contents has been developed and already approved by Ministry of Economy and Commerce. And DPSSES is considering the revising the version after improvement by factory inspections.

I-5 Negative factors and actions taken

【Negative factor 1】The spread of COVID-19 brought the drastic negative impact on the normal project schedule in Phase I with suspending the activities of Japanese experts at Kyrgyz site for about one year（April 2020 to March 2021）

（Actions taken by the project）	
1)	The expert team prepared a draft training programs and contents of technical level qualification tests for C/Ps.
2)	The expert team had frequent communications with the C/P team and JICA through internet meeting system as well as expert internal meeting.
3)	The project carried out remote trainings on statistics for laboratory technicians conducted eighteen (18) times from Oct,2020-Mar,2021 and on HACCP seven principles for factory inspectors conducted eleven (11) times from Sep,2020-Mar,2021.
【Negative factor_2】In 18 July 2021, JICA gave the project a notice on the abeyance of expert's travel to the Kyrgyz (without designating the definite periods) due to a skyrocketing number of COVID-19 patients in Kyrgyz. With following the JICA's instruction, the project urgently cancelled the expert's assignment schedule to the Kyrgyz in August and September. On 16 August, JICA notified to all JICA concerned project and experts on a travel to the Kyrgyz being possible.	
（Actions taken by the project）	
1)	The expert team urgently discussed and proposed to the C/P team the implementation of the remote training for tentatively two (2) months from August to September 2021 as expecting the experts could travel to Kyrgyz from October.
2)	After completion of the remote training from August to September, the expert could resume to travel the Kyrgyz from October to November,2021

I-6 Progress of Actions undertaken by the counterpart organization /Government of Kyrgyz (Relating to 1-5)

1. The C/P organizations have fully agreed on the revision of the project activity schedule and contents in consideration with an influence of COVID-19. And all C/P organizations have been showing their full cooperation to the Project in order to make up for the blank of activity in Kyrgyz.

2. Delay of Work Schedule and/or Problems (if any)

2-1. Issue and activity component of Task team (TT) or activity other than TT related under delay

<Detail of delay, cause and action to be taken or has been taken to recover＞

1) "Workshop on Food Hygiene Inspection"

The initial workshop schedule was on October 17-19 and it was rescheduled to 17- 19 February, 2020 because of overlapping the schedule with ADB workshop of which participants was duplicated with those of FLAQUM project. The workshop was held successfully on revised schedule of 17- 19 February 2020.

2) Abeyance of project activities in Kyrgyz site and alternative works in Japan

COVID-19 pandemic has terribly messed up the entire schedule of project activity and expert's dispatch to the Kyrgyz Republic.

While the expert team stayed in Japan during the pandemic, the team continued the domestic works as described below. While pursuing those works, they also had a series of meetings and discussions successively with all relevant stakeholders including C/P teams (Ministry of Economy, Laboratory technician team, Factory Inspector team) and JICA (HQ& Kyrgyz office).

Showing below are the activities carried out by the expert team in Japan by March 2021.

・(April) The question list for the technical level qualification test(*1) for C/Ps was prepared.

(*1) *The technical level qualification test has a purpose of identifying the technical level and needs of the C/Ps, and reinforce their expertise further in the following project activities. The evaluation of their improvement level in knowledge and actual practice will be confirmed step by step with further advanced tests and practices. And project certificate on each technical level can be provided to the C/P who are judged as qualified at each level.*

・（May） Confirmation of analytical method by the prior check for SOP was carried out.

・(June) Questionnaire survey to the C/Ps was carried out in June by remote operation for the purpose of grasping their technical interests and needs for the future technology transfer in the project. And the survey result was reflected to the formulation of training programs targeting both laboratory technicians and factory inspector

・(April to June) The idea of training programs for the factory inspectors and laboratory technicians were discussed and the draft programs were formulated.

・(July to August) In the plan of distance training for C/Ps, the expert team developed two (2) kinds of training(self-learning) materials. The one is "Statistics of analytical data" for laboratory technician and another is "HACCP seven principles and twelve procedures" for factory inspectors.

・(September to December) 1st distance training for two teams (Laboratory technician of CVDE, DPSSES, CSM and factory inspectors of DPSSES and SI) were conducted on schedule.

・(December) After completion of the distance trainings, a questionnaire survey was carried out remotely to collect the comments of C/P teams. Based on the training result and comments of C/Ps, the expert team and C/P teams had a series of internet meetings and discussed how to review the training questions. Then, the discussion has concluded that the follow-up distance training should be continued in 2021 until resuming dispatch of experts to the Kyrgyz Republic.

・(January to March 2021) 2nd distance trainings for laboratory technicians and factory inspectors were conducted based on the request from the counterpart side.
**Total times of remote training (1st and 2nd) implemented from September 2020 up to March 2021 has counted consequently eighteen (18) times for laboratory technicians and eleven (11) times for factory inspectors respectively.*

・(From April 2020 to March 2021) The expert team had frequent meetings with project stakeholders by using internet conference system during this period.

*Frequency of the meetings→ 6 times with C/P teams, eight(8) times with JICA HQ & Kyrgyz office, and sixteen (16)times within the expert team.

3) Postponement of C/P training in Japan

Refer to above "Progress Ⅰ-1 (4. Promotion of training program in Japan)".

3.Modification of the Project Implementation Plan

3-1. On 29 September 2020, the Ministry of Economy (MOE), JICA (HQ & Kyrgyz office) and the

expert team had a meeting through internet conference system. In the discussion, JICA HQ explained their thoughts on how to cope with COVID-19's damage to the project activity and committed the extension of project term for necessary period.

3-2. After JICA 's decision to resume the expert dispatch to the Kyrgyz in 2021, the expert team has revised an activity schedule and its contents in accordance with an idea of project term extension.

3-3. AT the 3rd JCC meeting on 8 June,2021, the extension of project term was discussed to make up for the delay of Phase 1 schedule attributed to COVID-19. Then, the JCC has fully agreed the extension of the period for one year until 2023.

3-4. Minutes of Meetings between JICA and Kyrgyz authorities for the Record of Discussions on the technical cooperation project has been signed on September 26, 2022 in Bishkek. And main points discussed are that the project period changed from April 19, 2019 to December 31, 2023 etc. in the amended version of Project Design Matrix (PDM)

ANNEX AND ATTACHMENT

List of Annex

Annex I. Plan of Operation (P.O) ver. 7.0

Annex II. List of Reference Material Procured and provided to the laboratories.

Annex III. List of Technical Manuals, Teaching Materials and Guidelines, etc.

Sr.	Title of deliverables	Type	Completion date
1	Baseline Survey Report	Electric data in English, Russian and Japanese	February, 2020 (Submitted to Kyrgyz side and JICA)
2	End-line Survey Report	Electric data in English, Russian and Japanese	November, 2023 (Submitted to Kyrgyz side and JICA)
3	List of management documents	Electric data in English, Russian	November, 2023 (Submitted to Kyrgyz side and JICA)
4	Improved methods in the lab through the project	Electric data in English, Russian	November, 2023 (Submitted to Kyrgyz side and JICA)
5	Inspection Check sheet	Electric data in English, Russian	November, 2023 (Submitted to Kyrgyz side and JICA)
6	HACCP guideline for inspectors	Electric data in English, Russian	November, 2023 (Submitted to Kyrgyz side and JICA)
7	Three years human resource development plan	Electric data in English, Russian	November, 2023 (Submitted to Kyrgyz side and JICA)

-End

8. 監査員のための衛生管理マニュアル
（保健省疾病予防衛生疫学監督部）

project

Guideline
Hygiene management and inspection of milk and dairy production for compliance with HACCP principles and hygiene requirements (FLAQUM project)

Department of Disease Prevention State
Sanitary and Epidemiology Surveillance
Ministry of Health

2023

Оглавление

Guideline
Hygiene management and inspection of milk and dairy production for compliance with HACCP principles and hygiene requirements

Introduction

Integration of the Kyrgyz Republic into the common economic space of the Eurasian Union, as well as the need to enter international trade, creates prerequisites and, at the same time, imposes obligations to create a quality infrastructure in the country. In turn, the formation of quality infrastructure has a direct positive impact on the export potential of the country. Over the past few years, the Kyrgyz Republic, as an agrarian country, has taken a number of measures to increase exports of dairy products.

One of the elements of the quality infrastructure is the implementation of HACCP principles for the food industry through inspection and HACCP counseling of business communities by the state supervisory authority in the field of food safety control.

HACCP is a quality management system for food safety that includes the analysis and control of biological, chemical and physical risks that may result from the extraction, processing and production of raw materials, their distribution and consumption of final products.

Inspection - inspection of food products or control systems for food, raw materials, processing and distribution, including in-process and finished product controls, to verify compliance with requirements.

This Guide is intended for health inspectors (inspectors) to assist in the inspection of milk and dairy production facilities for compliance with HACCP principles and hygiene requirements.

1. Regulatory legal framework in the field of food safety

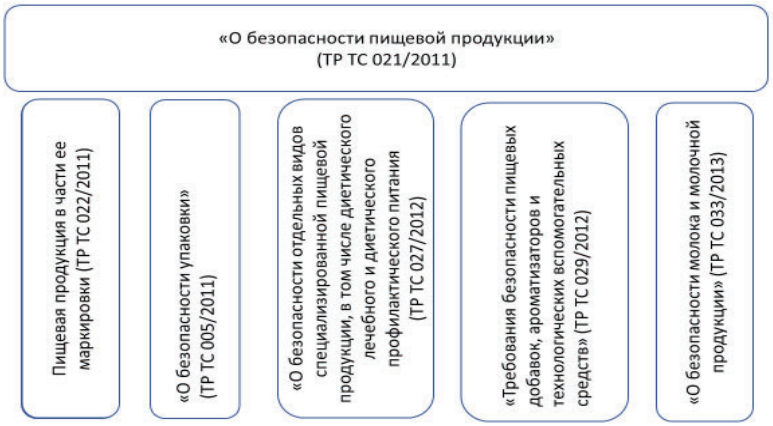
The Kyrgyz Republic has been a member of the Eurasian Economic Union (hereinafter - EAEU) since 2015. The EAEU regulatory legal acts have the status of supranational and are part of the system of legislation of the Kyrgyz Republic. The EAEU regulatory legal acts are approved by the Eurasian Economic Commission (EEC). The Eurasian Economic Commission ensures the creation of a single legal framework for the free circulation of products safe for human life and health, animals and plants, property on the customs territory of the Customs Union and the Common Economic Space.

Main documents of the EAEU in the field of food safety:

- Technical Regulations;
- Decision of the Customs Union Commission of April 7, 2011 N 621 "On the Regulation on the procedure for the application of standard schemes of assessment (confirmation) of conformity with the requirements of technical regulations of the Customs Union;
- Recommendation of the EEC Collegium of 26.01.2021 № 4 "On principles and approaches to the application of risk-based approach in the sphere of state control (supervision) over compliance with the requirements of technical regulations of the Eurasian Economic Union" (presence/absence of quality management systems - one of the risk criteria).

The regulatory legal framework of the Customs Union combines horizontal regulations with vertical ones. There are a number of technical regulations (on food safety, labelling, packaging, food additives and flavourings) that cover overlapping aspects of food products. There are also vertical technical regulations. These relate to specific product groups, in particular milk and dairy products.

Structure of EAEU technical regulations and requirements for milk and dairy products:



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The purpose of the Customs Union's technical regulations is to ensure that products entering the market comply with these regulations (general and for certain types of products) in all respects.

The requirements for the implementation of HACCP principles are reflected in the horizontal technical regulation TR TS 021/2011 "On the safety of food products":

Article 10. Ensuring safety of food products in the process of their production (manufacturing), storage, shipment (transportation), realization

п.2. When carrying out the processes of production (manufacturing) of food products related to the safety requirements of such products, the manufacturer shall develop, implement and maintain procedures based on the HACCP principles (in English transcription HACCP - Hazard Analysis and Critical Control Points).

p.3 The following procedures shall be developed, implemented and maintained to ensure food product safety in the process of its production (manufacturing):

1) selection of technological processes of production (manufacturing) of food products necessary to ensure food product safety;

2) selection of sequence and flow of technological operations of production (manufacturing) of food products in order to exclude contamination of food (edible) raw materials and food products;

3) definition of controlled stages of technological operations and food products at the stages of its production (manufacturing) in production control programs;

4) carrying out control over food (edible) raw materials, technological means, packaging materials, articles used in production (manufacturing) of food products, as well as over food products by means ensuring the necessary reliability and completeness of control;

5) control over operation of technological equipment in the manner ensuring production (manufacturing) of food products complying with the requirements of technical regulations and/or technical regulations of the Customs Union on certain types of food products;

6) ensuring documentation of information on controlled stages of technological operations and food product control results;

7) compliance with the conditions of storage and transportation (shipping) of food products;

8) maintenance of production facilities, technological equipment and inventory used in the process of production (manufacturing) of food products in a condition that excludes contamination of the food products;

9) selecting methods and ensuring that employees follow personal hygiene rules to ensure food safety;

10) selection of methods ensuring safety of the food products, establishment of frequency and performance of cleaning, washing, disinfection, disinsection and deratization of production facilities, technological equipment and inventory used in the process of production (manufacturing) of the food products;

11) maintenance and storage of paper and/or electronic documentation confirming conformity of the manufactured food products to the requirements established by these technical regulations and/or technical regulations of the Customs Union on certain types of food products;

12) traceability of food products.

Article 11. Requirements for ensuring safety of food products in the process of their production (manufacturing)

1. For the purposes of ensuring compliance of the food products released into circulation with the requirements of these technical regulations and/or technical regulations of the Customs Union on certain types of food products, the manufacturer of food products shall be obliged to implement safety procedures in the process of production (manufacturing) of such food products.

2. Organization of safety assurance in the process of production (manufacturing) of food products and control shall be carried out by the manufacturer independently and (or) with participation of a third party.

3. To ensure safety in the process of production (manufacturing) of food products, the manufacturer shall determine:

1) list of hazards;

2) list of critical control points of the production (manufacturing) process;

3) limit values of parameters controlled in the CTC;

4) the procedure for monitoring critical control points;

5) Establishing a course of action in case of rejection;

6) periodicity of the audit;

7) frequency of cleaning, washing, disinfection, deratization and disinsection;

8) measures to prevent rodents, insects, synanthropic birds and animals from entering production facilities.

4 The manufacturer is obliged to keep and store documentation on the implementation of safety measures during production (manufacturing)

5. It is forbidden to eat directly in the production premises.

6. Employees shall undergo mandatory preliminary medical examinations upon entering employment and periodic medical examinations.

7. Patients with infectious diseases, persons with suspicion of such diseases, etc. shall not be allowed to work related to production (manufacturing) of food products.

Before release into circulation, products must undergo conformity assessment to the requirements of technical regulations.

The following forms of conformity assessment are established for milk and dairy products, for milk and dairy products, and the bodies authorized to issue/register them:

Type of product	*Conformity assessment*		*Authority authorized to issue/register them*
	conformity assessment form	*authorization document*	
Milk and dairy products	Declaration of conformity	Declaration of Conformity	Certification bodies included in the Unified Register (EAEU)
	Veterinary expertise	Veterinary certificate	Veterinary Service under the Ministry of Agriculture of the Kyrgyz Republic

- Dairy products intended for children, - A new kind of dairy product	State registration	Certificate of state registration	Department of Disease Prevention and State Sanitary and Epidemiological Surveillance of the Ministry of Health of the Kyrgyz Republic and its territorial centers (included in the unified register of the EAEU)
	Veterinary expertise	Veterinary certificate	Veterinary Service under the Ministry of Agriculture of the Kyrgyz Republic

2. Prerequisite Programs

2.1. Raw material control

Raw material control is an operational program "Input control". The HACCP input control procedure is carried out during acceptance of food products, raw materials and semi-finished products for further processing and realization.

In accordance with TP TC 021/2011 "On Food Product Safety", control is carried out over food (edible) raw materials, technological means, packaging materials, articles used in the production (manufacturing) of food products, as well as over food products by means ensuring the necessary reliability and completeness of control.

The main task of incoming raw material control is to prevent the launch of products that do not meet the established requirements.

With constant control of ingredients, the manufacturer does not allow the use of contaminated raw materials, low-quality elements, materials, the use of which may adversely affect the quality of the finished product.

Acceptance procedure

When developing a HACCP system, it should specify:

- what package of documents the supplier must provide, requirements for each product group (e.g. dairy and meat products have different requirements and set of documents);
- what in the accompanying documentation should be checked (batch number, date, etc.);
- requirements for product shelf life (e.g. should sausage with a residual life of 2 days be accepted? etc.);
- product quality attributes that are mandatory to check for, for each of the product groups;
- transportation requirements (temperature, cleanliness of the vehicle, commodity proximity, etc.);
- in which cases the supplier should refuse to accept the goods.

The HACCP incoming inspection procedure is based on:

- of the consignment note without opening the packaging;
- technical and other operational documentation;
- documents confirming the quality and safety of product use (certificates and/or declarations of conformity, refusal letters);
- visual inspection of single samples from opened containers;
- operational check with assessment of compliance of real parameters with those specified in the accompanying documentation.

Separate procedures are developed for each type of raw material, the implementation of which will allow to perform incoming inspection in compliance with the requirements of ISO 22000.

Input control documentation includes:

- tare and inventory inspection log;
- log of main and auxiliary raw materials;
- veterinary certificates and/or veterinary certificates;
- certificates;
- declaration of conformity.

Preventive actions/control measures:

- "Internal raw material quality control system" to ensure that milk from sick animals is not accepted.

Evaluation and verification of milk suppliers (farms):

- on the state of animal welfare conditions;
- absence of infectious diseases;
- compliance with sanitary and hygienic requirements for milk collection, storage and transportation;
- periodic sampling of milk for microbiological and mechanical contamination.

Management measures

- control by laboratory workers and milk receivers of the control program (milk must not contain antibiotics, which is determined by rapid tests. In our country there are four groups of antibiotics under constant control: Beta-lactam - penicillin, tetracycline group, chloramphenicol, streptomycin;
- visual inspection of compliance with the sanitary condition of milk tank trucks by examining tank washings. The main types of contamination in milk tankers are: milk stone, mold, grease film.

- sanitizing milk pipes and spigots before use;
- visual control of milk during mixing in a tanker truck (during sampling).

Testing in the production laboratory

- for chilled milk t not exceeding +10°;
- organoleptic indicators (taste, odor);
- acidity -17-19°T;
- cleanliness group;
- Evaluation and screening of milk suppliers (farms) for inhibitory substances, absence of antibiotics;
- records on cards with specifications of raw materials.

Ingredient acceptance

- In the presence of accompanying documents (certificate of origin, sanitary-hygienic conclusion, test reports);
- Packaging integrity, visual assessment;
- Control of temperature not exceeding +18°C for bacterial starters, conditions and duration of transportation.

Scheme of laboratory control

№ n/a	Control subject and actors TND	Controllable indicators	Periodicity of control control	TND per control method	Metro-logic provisioning	Responsible for supervision	Registrable results (copro-dri-documents)
1.1							
1.2							
1.3							

2.2. Management of hygiene of premises and equipment

According to the requirements of TR TS 021/2011 "On Food Product Safety", organizations of production facilities where the process of production (manufacturing) of food products is carried out shall comply with the following requirements:

1. The layout of production facilities, their design, placement and size shall ensure:

1) possibility to implement the flow of technological operations excluding counter or cross flows of food (edible) raw materials and food products, contaminated and clean inventory;

2) prevention or minimization of air pollution used in the process of production (manufacturing) of food products;

3) protection against penetration of animals, including rodents, and insects into production facilities;

4) possibility to perform necessary maintenance and current repair of technological equipment, cleaning, washing, disinfection, disinsection and deratization of production facilities;

5) the necessary space for the implementation of technological operations;

6) protection against dirt accumulation, particles falling into the produced food products, condensation, mold formation on the surfaces of production facilities;

7) conditions for storage of food (edible) raw materials, packaging materials and food products.

2. Production premises where the production (manufacturing) of food products is carried out shall be equipped:

1) means of natural and mechanical ventilation, the quantity and (or) capacity, construction and design of which allow to avoid contamination of food products, as well as provide access to filters and other parts of the said systems that require cleaning or replacement;

2) natural or artificial illumination complying with the requirements established by the legislation of the Customs Union member state;

3) toilets, the doors of which shall not face the production facilities and shall be equipped with hangers for working clothes before entering the vestibule, equipped with washbasins with hand washing facilities;

4) hand washing sinks with hot and cold water supply, hand washing facilities and devices for wiping and (or) drying hands.

3. Personal and industrial (special) clothing and footwear of the personnel shall not be stored in the production premises.

4. Any substances and materials not used in production (manufacturing) of food products, including detergents and disinfectants, except for detergents and disinfectants required to ensure current washing and disinfection of production facilities and equipment, may not be stored in production premises.

5. Parts of production premises where production (manufacturing) of food products is carried out shall comply with the following requirements:

1) floor surfaces shall be made of waterproof, washable and non-toxic materials, be accessible for washing and, if necessary, disinfection, and proper drainage;

2) wall surfaces shall be made of waterproof, washable and non-toxic materials that can be washed and, if necessary, disinfected;

(3) ceilings or, in the absence of ceilings, interior roof surfaces and structures above production areas shall prevent the accumulation of dirt, mold, and particles from settling on ceilings or such surfaces and structures and shall help reduce condensation;

4) opening exterior windows (transom windows) must be equipped with insect screens that can be easily removed for cleaning;

5) doors of production facilities shall be smooth, made of non-absorbent materials.

6. Doors shall be opened outward from the production premises, unless otherwise stipulated by fire requirements.

7. Sewage equipment in production facilities must be designed and executed in such a way as to eliminate the risk of contamination of food products.

8. It is prohibited to repair production facilities simultaneously with production (manufacturing) of food products in such production facilities.

2.3. Facility Site Requirements

The boundaries of the company's territory are clearly defined.

A sanitary protection zone has been defined for the enterprise.

Access to the site is controlled and there is a separate room for security staff;

A perimeter fence has been installed.

Surveillance cameras have been installed.

Installed entrance doors/gates with locks and appropriate personnel disinfection facilities.

A scoreboard has been installed that shall include the name and address of the business entity.

Fenced off areas for bulk storage, containers and other materials.

The zoning of the internal territories of the enterprise has been performed.

Transportation routes and parking areas have been identified.

Traffic and people movement patterns through the area have been determined.

Appropriate design solutions and materials preventing product contamination have been used for buildings and structures, covering of transportation routes, parking or other areas.

A natural landscape has been created and/or maintained in areas that do not carry a functional load.

Roads, parking lots and other areas are cleaned of dust, standing water and other potential contaminants. Water and/or drainage systems are provided for pads, roofs and other similar surfaces where necessary.

2.4. Buildings, structures, structures and premises therein.

Equipment located on the exterior of buildings.

The amount of equipment located outside is minimized.

Equipment located outside of buildings is placed to prevent pests from breeding, to facilitate the inspection process, and to protect equipment from deterioration and contamination.

Internal design, layout and traffic patterns.

Buildings and facilities provide for physical separation of raw food areas from processed food areas, which includes, but is not limited to, walls, fences or partitions, or reasonable distances that minimize food contamination risks.

Openings between rooms for transporting materials, raw materials and finished products minimize the entry of foreign objects and pests.

Floors, walls and ceilings, as well as structures on/in and attached to them (except production equipment).

The material of the walls and floors of the production area allows them to be washed or cleaned, depending on the process or hazards that may be present in the area.

The geometry of wall and floor joints and corners allows for efficient cleaning and washing. Where possible, wall and floor joints in production areas are rounded.

The floors are designed to avoid water accumulation, be free of cracks and potholes.

The floor surfaces are made of waterproof washable and non-toxic materials.

In wet production areas, floors are provided with a drainage system with water locks.

The drainage system is closed and equipped with drains in the necessary places

Gutters are made of materials that are easy to clean and maintain.

Floor drains are easily accessible for cleaning and inspection.

The wall surfaces are made of waterproof, washable and non-toxic materials that can be washed and, if necessary, disinfected.

Ceilings or, if there are no ceilings, interior roof surfaces and structures above production areas shall prevent the accumulation of dirt, mold, and particles from accumulating on ceilings or such surfaces and structures and shall prevent condensation of vagi

No peeling paint, other surface materials, or rust on equipment or suspended structures, ceiling or wall surfaces.

Clamps, pipes, conductive ducts and hanging structures are installed and maintained so that moisture and condensation droplets do not contaminate food, raw materials or food contact surfaces.

Exterior opening windows, roof vents or fans are protected by insect screens.

Exterior openings for the passage of people, movement of goods, or movement of vehicles, closed by doors, gates, or protected by pest screens.

Doors and other devices closing openings in production facilities are smooth and made of non-absorbent materials.

Doors and other devices covering openings in production facilities shall be installed in such a way as to prevent the entry of pests, contamination, and to facilitate compliance with the temperature and humidity regime.

Doors and other devices closing openings in production premises shall be opened in the direction of movement of materials, foodstuffs and people, unless fire requirements stipulate otherwise and it is technically possible.

All plots are provided with sufficient lighting for the purposes achieved in those plots.

It is forbidden to use light bulbs that are not covered with lamps.

Do not place luminaires directly over exposed equipment. Exceptions to this requirement are those cases where it is technically impossible to fulfill this requirement.

Lamps, windows, mirrors, skylights, and other glass products located above production areas, ingredient storage areas, and packaging material are protected to prevent food contamination.

Equipment Placement.

The equipment is designed and placed to facilitate the execution of the plant's basic programs as well as monitoring.

Equipment is located so that it is accessible for operation, cleaning, washing and disinfecting, and maintenance.

Laboratory and laboratory equipment.

Laboratory equipment integrated into the production line and stand-alone equipment is in controlled environments to minimize the risk of product contamination.

The laboratory is designed, located and operated to prevent food contamination. It has no direct access to the production area.

Placement of auxiliary aids.

Each production area includes:

Handwashing fixtures (devices) near all entrances to the premises.

Identified containers for cleaning, washing and disinfecting removable parts of equipment.

Identified containers for cleaning, washing and disinfection of the inventory used for cleaning, washing and disinfection of the premises. Identified containers for temporary separate storage of production and non-production waste.

Cabinets, enclosures, or other similar fixtures for storing inventory used to clean, wash, and sanitize equipment.

Cabinets, enclosures, or other similar fixtures for storing inventory used for cleaning, washing, and sanitizing the premises.

Each non-production room has:

Identified containers for the temporary separate storage of non-productive waste. Cabinets, enclosures or other similar devices for storing inventory used for cleaning, washing and, if necessary, disinfecting the facility.

Washing and cleaning areas, wastewater disposal.

Washing and cleaning areas are located at a sufficient distance from production areas (where required).

Washing and cleaning and production areas are separated by air curtains, partitions, doors, or other systems to eliminate cross-contamination.

The characteristics of the wastewater disposal system match the production process.

Where technically feasible, wastewater is disposed of directly into the sewer system through hydrolocks or other devices to prevent contamination of food equipment from the wastewater disposal system.

Hand washing facilities (devices).

Hot and cold running water is supplied to all hand washing facilities (devices) located at each entrance to production facilities, toilets and personnel changing rooms. These facilities are, as a minimum, equipped with detergent and disinfectant, and hand drying facilities are available.

Handwashing fixtures (devices) are identified by purpose and physically separated from fixtures (devices) for washing production utensils, parts of production equipment, and other supplies.

Non-contact hand washing equipment has been installed where possible.

Personal hygiene facilities and restrooms.

Toilet rooms are equipped with exhaust fans that exhaust air to the outside and do not open directly into the production, packaging or raw material storage area.

Personal hygiene rooms and toilets for staff are marked and located so that they can go to the production area in a way that minimizes the risk of contamination of workwear.

Adequate number and placement of hand washing, drying and sanitizing devices are provided.

Sinks designed for hand washing, with touchless taps (where possible), separate from sinks used for other purposes.

Staff hygiene rooms do not open directly into production, packaging or storage areas.

Adequate changing facilities (where necessary) are provided for all plant personnel.

The changing lockers consist of two parts, where personal and special clothing are stored separately.

Staff canteens and designated eating areas.

Staff canteens and designated areas for food storage and consumption are located so that the potential for cross-contamination of production areas is minimized.

Warehouse space.

Rooms used to store ingredients, packaging materials and products ensure they are protected from dust, condensation, runoff, waste and other sources of contamination.

Storage areas are organized in such a way that there is a possibility of separate storage of raw materials, semi-finished and finished products, which are not allowed to be cross-contaminated.

A separate, restricted storage area for detergents, chemicals and other hazardous substances is provided.

2.5. Sanitary Control.

Sanitary control is one of the necessary conditions to ensure the correct flow of the technological process and high quality of products, especially when working in continuous flow production.

Sanitary control includes:

- control over cleanliness of equipment, containers, inventory, transportation and correctness of their washing and disinfection;
- cleanliness inside production and utility rooms;
- water control, air control;
- control over personal hygiene of production and expedition employees.

Enterprise valuation:

- Assessment of walls, floors and other surfaces for dust, cracks or peeling paint, including wall-floor junctions
- Assessment of the ceiling for dust, dirt and insects
- assessment of doors (must be self-closing) and window screens
- checking for gaps between the floor and doors, holes in the wall
- check lighting, temperature, humidity
- Check air circulation (direction from the finished product to the raw material)
- checking the use of the water supply source - water must be potable, ice must be made from potable water

Product Evaluation:

- inspection of the finished product warehouse for moisture and rodent infestation
- checking the temperature in refrigerators and freezers
- Verification of primary procedures for raw material receipt/product shipment
- Checking the label for compliance with consumer protection requirements
- Ensure that the label promotes traceability in the event of a product recall
- verification of product sales records

Control of loading and transportation conditions:

- Loading must not contaminate or spoil the product
- Transportation must protect the product and not serve as a source of contamination

Assessment of the surrounding area

- conduct an inspection of the surrounding area of the enterprise after the enterprise inspection
- characterize the total area of the enterprise

- assess the construction (layout) and materials of the building
- check whether the raw material and finished product areas are separated
- check the stability of the electricity supply (or the availability of a generator)
- Certify water supply (water quality) is under constant control.

Sanitation means mechanical cleaning of working surfaces from food residues, thorough rinsing with hot water using detergents; disinfection and final thorough rinsing with hot water until the disinfectant (*sanitizer*) is completely removed.

Disinfection aims to destroy any remaining microflora. Equipment can be disinfected by steaming it with saturated steam, which kills both vegetative cells and spores of microorganisms.

Disinfection can also be done with chemical disinfectants.

The final hot water treatment plays a dual role: on the one hand, it removes the residual disinfectant, on the other hand, it heats the surfaces, which helps them to dry quickly.

In washes from well-washed equipment, the total microbial count and coli-index shall not exceed their content in the clean water entering the wash.

Quality control of washing and disinfection of pipelines, hoses, hoses cannot be carried out in this way, because it is difficult to make washes from their inner surface with the help of a stencil. In this case, the total number of microorganisms and coli-index are determined in the last washing water by its microscopy and sowing. The total bacterial count and coli-index of the wash water should not differ from the water used in production. To control the quality of washing and disinfection of inventory samples are taken at the time when the inventory is prepared for work. From small equipment (stirrers, probes, thermometers, knives, syringes, etc.) swabs are taken with a sterile swab from the entire surface of the object and examined for the total number of microorganisms and the presence of Escherichia coli. Tables, racks, trays, buckets, shovels, etc., are swabbed with a sterile swab using a burned stencil and analyzed in the same manner.

2.6. Control of personnel hygiene

Personnel hygiene control procedure is developed to prevent contamination of food products through persons who are carriers of diseases or sick, to ensure food safety during delivery and storage of raw materials, semi-finished products, food products, during production and realization of finished products and to preserve health of the consumer.

The procedure establishes basic provisions for personal hygiene rules for personnel involved in the production and sale of food products.

Sanitary and hygienic rules - a set of requirements applicable to the employees of the enterprise and the production environment, aimed at ensuring the output of products in accordance with the requirements of external and internal regulations.

The rules of personal hygiene are rules from the section of hygiene, aimed at preserving and promoting human health by observing sanitary and hygienic regime in his personal life and activities. Personal hygiene covers the hygienic maintenance of the body, footwear and clothing.

Medical examination is a control medical examination of workers' health status, one of the most important components of primary prevention of occupational and occupationally caused diseases.

Hygiene education is the teaching of the basics of hygiene.

Sanitary clothing - personnel clothing that protects food products from contamination by microflora.

Special clothing - special clothing that protects personnel from the effects of harmful production factors at work.

Each employee is personally responsible for ensuring compliance with the rules of personal hygiene. The HACCP team leader is responsible for controlling the implementation of the Procedure.

Personal hygiene of staff

All employees directly involved in food handling must comply with the following hygiene requirements:

Each employee must have a personal medical book, where the results of all examinations are regularly recorded.

All new employees must undergo hygiene training and then once a year with a note in their personal medical book.

Medical examinations shall be carried out in accordance with the established procedure and within the established timeframe in accordance with the Resolution of the Government of the Kyrgyz Republic dated May 16, 2011, No. 225.

Persons who have not undergone medical examination or hygienic training are not allowed to work.

Requirements for handling personal belongings, personal and sanitary clothing:

- leave outerwear, personal items (bags, bags, cosmetics, jewelry, watches, etc.) in the lockers of the dressing rooms;
- Receive clean sanitary clothing daily;
- Before starting work, they must put on clean sanitary clothes so that they completely cover personal clothes, tuck their hair under a headscarf or cap and wash their hands thoroughly with warm water and soap;
- After the end of the work shift, hand in soiled sanitary clothes and store the remaining clean clothes in a designated locker;
- to vacate personal lockers in dressing rooms for sanitary treatment;
- Sanitary clothing should be changed as soon as it is soiled;
- It is not allowed to place sanitary clothes in lockers with outer clothing and personal belongings of employees;
- When going to the restroom, the employee removes his/her robe; after going to the restroom and going to the production site, he/she puts it back on.

To prevent foreign objects from getting into raw materials, semi-finished products, food products and finished products, it is prohibited:

- bring in and store small glass and metal objects (except for metal tools and technological equipment);
- piercings on uncovered parts of the body (nose, tongue and eyebrows);
- fasten sanitary clothes with pins, needles and keep personal items (mirrors, combs, rings, badges, cigarettes, matches, etc.) in the pockets of smocks;
- enter the production area without sanitary clothing or wearing overalls for working outside;
- wear any outer garment over the sanitary garment;
- enter the production facility not wearing a full set of sanitary clothing.

Locksmiths, electricians and other workers engaged in repair work at production facilities:

- are obliged to follow the rules of personal hygiene,
- to work in overalls,
- carry tools in special closed boxes with handles,
- take measures to prevent foreign objects from entering the product.

Sanitary clothing must be removed when leaving the building and visiting non-production areas (toilets, meal rooms, etc.).

Employees should use a sanitizing mat or other disinfectant when entering the product area to prevent contamination of semi-finished and finished products.

Requirements for maintaining hand cleanliness:

- keep your hands clean;
- Hand nails must be kept short and trimmed. Employees with false fingernails or lacquered nails are not allowed to work;

- wash hands before starting work and after every break in work, when changing from one operation to another, after contact with contaminated objects;

- Wash hands twice after going to the toilet: after going to the toilet before putting on a smock and at the workplace, immediately before starting work;

- after leaving the toilet, disinfect shoes on a disinfectant mat or with other disinfectants;

- Observe the hand sanitizer treatment regime;

- Washing hands in production baths is not allowed.

Control of hand cleanliness is carried out visually before starting work, and periodically flushes are taken from the hands of personnel.

After handling eggs, the worker should remove the apron, wash hands with soap and water and disinfect them with a solution of an approved disinfectant.

Requirements for glove use:

- Fabric gloves are used to protect hands from damage/cold while handling products;

- If there are cuts on the hands, the wound is sealed with a band-aid and a glove is worn;

- Disposable gloves are used in the manufacture of products;

- Gloves must be in good condition and clean, otherwise they should be replaced to avoid contamination of the objects handled;

- hands should be completely dry before putting on gloves;

- portioning of ready meals is carried out wearing gloves.

Gloves should always be sufficient and available to personnel at all times.

Food and water rules:

- meals should be taken only in the dining room;

- It is forbidden to store foodstuffs in the individual closets of the checkroom;

- Food brought by staff for personal consumption must not be perishable, must be packed in a plastic dish or container, tightly closed with a lid, placed in a personal bag;

- A personal food bag is placed in the refrigerator located in the meal room.

Prohibited:

- eating in the production area, bringing personal foodstuffs into the production area, drinking tea, coffee, other beverages, chewing gum at workplaces;

- Dispose of leftover food/beverages, packaging/disposable utensils from food/beverages of personal use in the waste containers located in the production area;

- leaving leftovers in the refrigerator for storage until the next working day (leftovers are carefully packed in a plastic bag and disposed of in the household waste container located in the meal room).

Health requirements for personnel

To prevent contamination of food through persons who are carriers of disease or who are ill, employees of the establishment must comply with the following requirements:

- the responsible employee must inform incoming employees in a timely manner of the list of bacterial carrier diseases that prohibit the employee from being in food contact areas;

- All employees are required to undergo a preliminary medical examination upon entering the workplace;

- according to the approved schedule, all employees must undergo periodic medical examinations;

- Every day before starting work, employees should make a note of their health status in the Employee Health and Pustular Disease Examination Log (Appendix 2 to this manual);

- Employees should notify their immediate supervisor if they experience symptoms of illness or any ailment.

Diseases and bacterial carriers that do not allow the employee *to be* in food contact areas:

- typhoid, paratyphoid, salmonellosis, dysentery;

- helminth infections;

- syphilis in the contagious period;

- lepra;
- pediculosis;
- contagious skin diseases: scabies, trichophytosis, microsporia, parsha, actinomycosis with ulcerations or fistulas on exposed parts of the body;
- infectious and destructive forms of pulmonary tuberculosis, extrapulmonary tuberculosis with fistulas, bacteriuria, tuberculous lupus of the face and hands;
- gonorrhea (all forms) for the duration of antibiotic treatment and negative results of the first control;
- infections of the skin and subcutaneous tissue.

Employees with the following diseases and pathological conditions are not allowed to work:
- jaundice;
- diarrhea;
- vomiting;
- a rise in temperature;
- sore throat accompanied by fever;
- visible infected skin disorders (boils, cuts, ulcers), as well as discharge from the ears, eyes, nose.

Passing periodic medical examinations

Periodic medical examinations are required to:
- to conclude a contract for periodic medical examinations with a medical organization that has the right to conduct them;
- compile lists of persons subject to periodic medical examinations by name;
- send the lists to the contracted medical organization;
- Notify employees of an upcoming medical examination.

The responsibility for medical examination of personnel lies with the head of the enterprise.

Preliminary examination is considered completed when the person entering the workplace has been examined by all medical specialists, and the full scope of laboratory tests has been performed and a medical report on the results of the preliminary medical examination (admission) has been received.

The decision on employment is made by the director of the company in accordance with the medical report.

The required volume of tests and their frequency during preliminary and periodic medical examinations is determined in accordance with the Program (plan) of industrial control and sanitary and anti-epidemiological measures and Appendix 2 to this manual.

Informing about health status daily before starting work

Before the start of the shift, the responsible person shall conduct a daily inspection of the exposed body surfaces of employees for pustular diseases and make appropriate notes in the Health and Pustular Disease Examination Log (Appendix B).

Persons with pustular skin diseases, festering cuts, burns, abrasions, as well as catarrh of the upper respiratory tract are not allowed to work.

In the presence of illness or symptoms of illness, the responsible person, in conjunction with the HACCP Team Leader, shall:
- decide if you need skilled nursing care;
- if necessary, organize first aid (cuts, burns, lesions and any other wounds on the forearms and/or hands are covered with special waterproof bandages and the employee can continue working in the areas specified by the head of the unit (site);
- If necessary, remove the employee from food handling operations;
- Make an appropriate notation in the Staff Health and Pustular Disease Screening Log (Annex 3 to this manual)

Requirements for a first aid kit

First aid supplies are kept in the first aid kit.

The contents of the first aid kit shall comply with the requirements of "On Approval of Requirements for Completion of First Aid Kits for Employees with Medical Products".

Prohibited:

- smoking on the premises,
- bring medicines and drugs into the warehouse and production areas.

Procedures for handling sanitary and protective clothing

Provision of sanitary, special clothing, special footwear and other personal protective equipment at the enterprise is carried out in accordance with the approved norms.

Each employee shall have at least three sets of sanitary clothing.

The set of sanitary (special) clothing includes: jacket with pants (robe cotton or mixed fabrics), cap (cap), cap or kerchief, shoes covering the toes.

Employees shall keep sanitary clothing clean and neat throughout the day.

It is the responsibility of the employee to keep the sanitary clothing safe.

Washing, processing, ironing of sanitary clothes is carried out at the enterprise.

Dirty sanitary clothing is not used.

Employees are issued a clean set of sanitary clothing daily before starting work.

2.7. Staff training

Training of enterprise personnel - as part of the prerequisites program, as one of the mandatory moments of HACCP principles implementation.

Staff training is conducted regularly and included in the HACCP plan. The program, timing and list of employees are documented.

Types of learning:

- in-house training with the help of its specialists;
- in-house training with the involvement of experts and trainers;
- training outside the enterprise, at specially organized seminars, courses.

Training can be general and individualized.

For effective organization of personnel training it is recommended to detail by functional composition of personnel.

For example, staff programs by their composition:

1. training of the HACCP team
2. training of shop personnel, including to the new regulations
3. technical service training
4. training of engineering and technical staff
5. Training of those responsible for monitoring KCP, etc.
6. Training of new employees to the minimum rules, including safety (briefing), etc.

At the same time there are common themes, i.e. training for all staff.

Staff training on thematic programs (topics), e.g.: "HACCP system", "Prevention of food poisoning", "Product recall program", "How to wear uniforms, personal hygiene", "Chemicals used in production (detergents, detergents, other preparations)", "Sanitary rules of cleaning", "Pest control", "Rules of cleaning equipment", "How to enter documentation", etc.

At the end of training it is desirable to conduct testing. This is the result of personnel training, i.e. an idea of the extent to which the material has been mastered by the company's personnel.

Staff training on HACCP system

This requires first training the HACCP team, led by the work team leader, and then the plant staff.

All employees should have a general understanding, if necessary a thorough knowledge of the procedures basic to the principles of the HACCP system, as well as be able to work in the

system, according to the developed standards for the enterprise, adhering to the programs, instructions and procedures.

At the same time it will be much easier for the personnel of the enterprise to interact, to find a common language, to get the necessary result in their work, if they see the cause-and-effect relations of their work and organization of safe production.

More "High Level" training needs to be provided.

Every responsible staff member in a food business must have knowledge and skills:

- conducting internal audits,
- analyzing possible risks at the enterprise,
- identification of KCPs (critical control points),
- Ability to maintain documentation, records, etc,
- the ability to set KKT limits,
- communicating with auditors (owning and understanding the topic, defending one's opinion), etc.
- training in hygiene skills, sanitary requirements, etc.

Sanitation and hygiene training and certification program for decertified groups:

1. Introduction and familiarization: Normative legal acts in the field of public health and Technical Regulations of the Customs Union.

2 Mandatory preventive medical examinations of the decreed contingent, their significance.

3. Concept of germs and basics of epidemiology. The concept of contagious diseases. A special danger is bacterial carriage. Botulism. AKI.

4. Prevention of alimentary-dependent diseases, non-infectious and infectious diseases.

5. Concepts of healthy lifestyle, including the harm of smoking, nasvay, alcohol, etc.

6. Sanitary requirements for enterprises: sanitary and epidemiological requirements for the design, equipment and maintenance of various categories of facilities, compliance with sanitary and hygienic regime during technological operations, requirements for sanitary treatment of equipment, inventory, including HACCP principles.

7. Organization and implementation of production control.

8. Rules of personal hygiene of employees of organizations.

9. Sanitary and anti-epidemic (preventive) measures. Prevention of food poisoning. Responsibilities of the administration of organizations.

10. Disinfection, disinsection and deratization measures.

Recommended staff training logs:

- "Training log" with the necessary points reflected, including the signature of the lecturer and trainees,
- "Safety Log."
- contracts and agreement with the organization and the lecturer,
- training materials,
- class protocols,
- A stamp in the personnel's personal medical book with the results of hygiene training, etc.

Journal Form:

In the journal of registration of the results of professional hygienic training and certification of officials and employees of organizations - preferably in the following form:

Registration number	Date of registration	Name of organization	Full name of the listener	Position (profession)	Form of training	Receipt, No., date, amount	Full name of the lecturer	Note

appendix

A sample stamp (seal) for entering the results of certification on professional hygienic training in the corresponding page of the personal medical book:

_____

Name of institution

Register #_____

ATTESTED by ""_____year _

Name and signature of the lecturer:

_____

2.8. Pest and rat control

Pest and rat control in a food processing facility is important to minimize the transmission of foodborne diseases caused by microbial contamination.

Deratization is a set of measures and procedures aimed at combating the spread of rodents. It is carried out in the form of preventive measures and extermination by various methods.

The HACCP management system considers pests as a source of contamination, not as a foreign substance. TR CU 021/2011 "On the Safety of Food Products", TR CU 033/2013 "On the Safety of Milk and Dairy Products".

Pests can carry foodborne pathogens and generally contaminate food with foreign matter such as insect eggs, larval skins, rodent hair, waste and are vectors of various diseases: yersiniosis, salmonellosis, leptospirosis, tularemia, bubonic plague, sodocosis or rat bite fever, hemorrhagic fever, tapeworms, etc.

The main routes of transmission from mice and rats to humans are:

- Food - when consuming water and foodstuffs contaminated with rodent excretions and not subjected to preliminary thermal treatment;
- Contact - by contact with rodents, through pests living on mice or rats;
- airborne - viruses can also enter through the respiratory tract if a person works in areas where rats or mice have been found to congregate;
- through bites.

Highlights on pest control

Pest control requires vigilance both inside and outside the facility.

This includes:

- Maintenance of the area to ensure adequate sanitation and elimination of pest refuges. (prevention of spread);
- Maintaining buildings in proper condition to prevent pests from entering;

- Adherence to proper production techniques to ensure adequate sanitary conditions in the production facility. (Pollution Prevention).

Pest control plan (program)

The enterprise should have a preventive pest management program in place. It should be formalized and its implementation should involve both employees of the enterprise and inspection authorities.

Control over the quality of control, including assessment of the effectiveness of the measures taken and compliance with safety requirements, should be carried out also within the framework of the production control program.

The following types of work are conducted as part of the program and control: Active control (which starts with pest identification)

- Schedule and procedures for insect control operations (including trap cleaning)
- Insecticide identification and technical cards
- A production layout plan showing where baits and electric traps are localized.

Passive or preventive measures aimed at preventing pests from infesting the facility, i.e. it is necessary to create such conditions that pests cannot enter the facility and nothing attracts them there.

Passive control or preventive measures are aimed at depriving rodents of food, space, and nesting conditions and include:

- sanitary and hygienic measures - systematic maintenance of cleanliness in residential, commercial and industrial premises, yard territories and construction sites (cleaning on schedule, proper storage of food products (should be stored in a place inaccessible to rodents or in appropriate containers), proper disposal of garbage and garbage).
- sanitary and technical measures are made during construction or current repair of buildings and provide for measures that do not allow rodents of various importance (ventilation and other openings, basement windows, hatches low above the ground surface should be covered with wire mesh).

Adjacent area

1. Habitat and refuge removal
- thickets of grass
- waste, idle equipment and premises
- Stagnant water (old metal containers, tin cans)
- bird's nests (under the roof overhang)
- garbage containers and trash cans must be clean and covered

2. Elimination of inducing substances
- arranging grass (flowers and berries)
- waste and sewage odor

Prevention of pest invasion

1. Eliminating gaps and holes
- openings (windows, doors, receiving window)
- screen tear

2. Installation and management of pest control equipment

Air curtain, insect curtain

Preventing internal proliferation

1. Elimination of food residues

May contribute to food contamination by seeping in or providing a breeding ground for pests.
- under buildings
- drainage system

- gaps in the floor and wall
- stagnant water
Should be drained so as not to create a haven for insects.

Active control or extermination activities
- is carried out in order to reduce the number or complete elimination of rodents
- *Physical method - trapping, killing or repelling rodents*
- *mechanical method* - use of traps, traps or traps of various designs, including glue traps, which can trap several rodents. Traps and snares should be placed in places frequently visited by rodents.
- *acoustic (ultrasonic*)-modern ultrasonic repellents do not kill rodents, but only scare them away with special sound signals (GRAD A-500 and AC/DC).
- *biological method - consists* in the use of microorganisms pathogenic for rodents, which are treated with food baits.
- *chemical method* - use of rodenticide poisons. They are applied in the form of food baits with various products for pollination of dens and trails, water and gas treatment (gassing) of dens, warehouses, wagons and ships.

Pest control
1. Use suitable pest deterrents and pest killers to deter pests
- familiarize yourself with information about pest repellents
(especially in case of emergency and safety)
- usage concentration
- Protection of the production line and the need for cleaning after use
2. Proper storage of pest repellents and pest killers
3. Maintain records regarding destruction activities
Outdoor rodent control baits must be properly positioned, secured, covered and labeled. The lids of the baits must be closed using the devices provided or recommended by the manufacturer.
Indoor pest control measures include the use of mechanical traps, trigger traps, sticky cardboard traps, but should not include feeding stations.

Ensure that all precautions are taken to avoid potential food contamination.

Continuous monitoring of the plant situation is necessary to ensure safety and protection from pests.
1. Control of the presence (including traces) of pests by observation during rounds
2. Verification of monitoring equipment
- crawling insects: bait trap, sticky trap
- flying insects: light trap (sticky trap)
- specific insects: ferromone trap

Write down the result of the monitoring and analyze it
Monitoring analysis
1. Identification of trapped insects in a trap:
- internal distribution➔ assess the source of reproduction
- contamination from outside➔ assess the possible pathway of contamination or pollution
2. To confirm the effectiveness of the method of extermination and prevention of insect infestation:
- seasonal changes
- comparison with last year's results

2.9. Consumer complaints and recall program

The terms "withdrawal" and "recall" in accordance with the Resolution of the Government of the Kyrgyz Republic dated February 18, 2020 "On ensuring the safety of food products":

Seizure - a measure to prevent the sale and circulation of food products that do not comply with the established requirements

Recall - a measure to ensure the return of sold food products that do not comply with the established requirements

The main reasons for the recall

- Product contamination (biological, chemical or physical)
- Defective packaging
- Residues of prohibited pesticides, drugs, dyes or food additives
- Product components containing an unlabeled ingredient, especially if this ingredient is an allergen or sensitizing component (e.g. sulfites)
- Fake
- Disease detected by a health care provider

Important points on the recall program

1. Develop a "Product Recall Implementation Program" (also need to understand the cost of product recalls):

(A) Designate a recall coordinator within the company: to carry out recall actions without hindrance

B) Components of the Recall Implementation Program:

- A method for assessing the health hazards of related products;
- range of product recalls: confirming the effectiveness of product traceability (back and forth);
- A way of sharing information about the target product;
- method of official publication;
- A way of evaluating the recall program;
- how the recalled product is handled and stored

B) Simulation of a Product Recall Implementation Program (hands-on launch of a recall program is required to verify effectiveness).

2. Determine the method of reporting and the content of the report
3. Determine the method of reporting
4. Determine the frequency of the implementation of the recall
5. Determine the method of operating and maintaining the implementation record
6. When conducting a recall, record the occurrences of the implementation of the recall, day by day
7. After the recall program, an evaluation of the recall program is required

Example of an unacceptable case (company system, provision of information)

- The customer did not notice the recall information and therefore the products that caused the injury/illness were not recalled.
- As the recall information was insufficient, the client did not understand the recall statements: the reason for the recall, grounds and security measures.
- When the recall program was conducted, there were not enough staff to respond to customer inquiries.
- Customers couldn't figure out if the recall had ended or was still ongoing.

Recall procedure: withdrawal of unsafe food from circulation

- FPSOs should ensure that effective procedures are in place to respond to food hygiene failures.
- All deviations should be evaluated in terms of their impact on food safety or suitability.
- Procedures in place should ensure that all food products that may pose a risk to public health are fully, promptly and effectively identified and removed from circulation by the appropriate OPPO and/or that consumers return these products to the OPPO.
- If a product has been recalled because of the likely presence of properties that may pose an immediate threat to health, other products produced under similar conditions that may also pose a threat to public health should be evaluated for safety and possibly withdrawn from circulation.
- Where the product to be withdrawn from circulation or returned to the OPPO may already have reached the consumer, reporting to the competent authority should be required and consideration should be given to informing the public.
- Recall procedures should be documented, maintained, and modified as necessary based on the results of periodic field testing.
- Until the seized or returned products are destroyed, used for purposes other than human consumption, found safe for human consumption or processed in a manner that reduces the risk to an acceptable level, if authorized by the competent authority, the products should be stored under safe conditions.
- OPPOs should maintain documents containing information on the reasons for the recall, the volume of products recalled, and the corrective actions taken.

Customer complaints

Gather and share information about the product complained about

Who? The person who received the complaint from the client.
Sales department
Quality Control Department

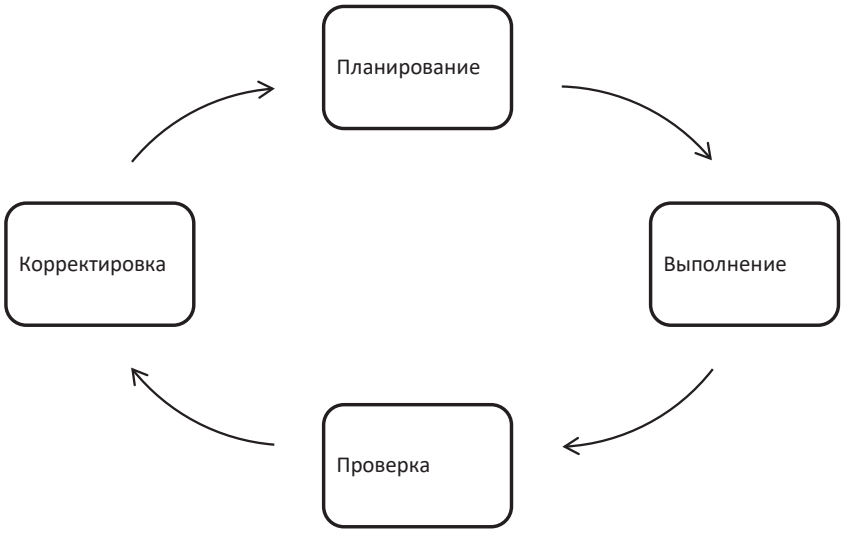
What? Product Name
Date and time
Customer location, Purchased raw materials
the substance of the complaint and its effectiveness
(Impact on health, client's attitude)

ResponseReturn , Product exchange, Detailed information (report sending)

Investigation based on a complaint

1. determine the place of origin
2 Identify the causes of the occurrence
3. determine responsibility for what happened

PDCA cycle for customer complaints



Alleged cause of complaint (health hazard)

Type of hazard	*Danger*	*Complaint*	*Reason*
Biological	Pathogen, putrefactive bacteria	Occurs when raw materials are obtained	• Improper handling by the manufacturer or supplier • Improper acceptance
		Contamination during processing	• Improper handling by the operator • Faulty cleaning and sterilization (equipment, machinery, instruments)
		Growth in processing	• Improper storage • Improper sterilization • Incorrect temperature control in the production area • Incorrect length of processing time (detention period)
Chemical	Pesticide residues	Occurs when raw materials are obtained	• Improper pesticide control by the manufacturer • Improper acceptance
	Cleaner, Disinfectant	Contamination during processing	• Improper handling by the operator • Malfunction of cleaning (equipment, technique, device) • Improper use and storage of cleaning, disinfecting and disinsecting agents
	Allergen	Occurs when raw materials are obtained Contamination during processing	• Improper handling by the manufacturer or supplier • Improper handling by the operator • Malfunction of cleaning (equipment, technique, device)
Physical	Solid foreign object (Metal, etc.)	Occurs when raw materials are obtained	• Improper handling by the manufacturer or supplier • Improper acceptance
		Contamination during processing	• Improper handling by the operator • Error in the production process when metal is detected • Lack of maintenance and monitoring (equipment, machinery, installation)
	Hair, soft foreign objects	Occurs when raw materials are obtained	• Improper handling by the manufacturer or supplier • Improper acceptance
		Contamination during processing	• Improper handling by the operator
	Insects	Occurs when raw materials are obtained	• Improper handling by the manufacturer or supplier • Improper acceptance
		Contamination during processing	• Improper pest and rat control • Lack of maintenance and hygiene control of the facility

Questions on seizures and product recalls are also included in the checklist (paragraphs 91 to 94 of the checklist, see Annex 1 to this manual).

2.10. Control of waste and drainage system

Legislative and regulatory legal framework in the system of waste and consumption management:

- Law of the Kyrgyz Republic "On Production and Consumption Waste";
- Law of the Kyrgyz Republic "On Environmental Protection";
- Resolution of the Government of the Kyrgyz Republic dated August 5, 2015, No. 559 "On Approval of the Procedure for Production and Consumption Waste Management in the Kyrgyz Republic";
- Technical Regulations of the Customs Union "On the Safety of Food Products" (TR TS 021/2011).

Determination

Waste management - all activities related to collection, storage, use, neutralization, transportation and disposal of waste;

Production wastes - residues of materials, raw materials, semi-finished products, formed in the process of production or performance of works and lost completely or partially their consumer properties, as well as related substances formed in the process of production and not used in this production;

Consumer waste is products, materials and substances that have lost their consumer qualities due to physical or moral wear and tear. Consumption waste also includes solid domestic waste, which arises in the process of human activity.

In accordance with the Technical Regulations of the Customs Union "On the Safety of Food Products" (TR CU 021/2011 Chapter 3 Article 16):

1. Waste generated in the process of production (manufacturing) of food products shall be regularly removed from production facilities.

2. Wastes generated in the process of production (manufacturing) of food products shall be divided into categories:

(a) Waste consisting of animal tissues;

b) waste products of productive animals;

c) other waste (solid waste, garbage).

(3) Waste according to category shall be separately placed in labeled, in good condition and used exclusively for the collection and storage of such waste and garbage, in closed containers.

4. Removal and destruction of waste from production premises, from the territory of the production facility for production (manufacturing) of food products shall not lead to contamination of food products, environment, occurrence of threat to human life and health.

Measures for waste disposal and storage:

- If possible, waste should be collected and stored in closed containers.
- Waste should not be allowed to accumulate unnecessarily in food processing, food storage areas, other work areas and surrounding areas if it could jeopardize food safety and suitability.
- External packaging material should be removed from production areas, as it can also be a source of food contamination.
- There should be instructions for waste disposal and instructions for the management of non-conforming products.
- Disposal of waste, including hazardous waste, should be handled by trained personnel.
- Waste should not become a source of cross-contamination.

- Waste storage areas should be easily identifiable, kept clean and protected from pest infestation. They should be located at a sufficient distance from production areas.

- Containers used to store hazardous substances prior to disposal should be identifiable and, where appropriate, lockable to prevent intentional or accidental contamination of food.

- Containers for waste, by-products and inedible or hazardous substances shall be identifiable, properly constructed and, where appropriate, made of impermeable materials.

- Waste disposal records should be maintained where appropriate.

- Waste must be regularly removed from the production area, for this purpose it is necessary to conclude contracts with the relevant services.

- Ensure proper storage and disposal (storage facilities) of solid waste;

Organization of cleaning and cleansing

Adequate means and facilities for washing and cleaning equipment and supplies should be provided. An adequate hot and/or cold water supply should be provided.

Washing of the waste container should be done outside the production area to avoid spreading contamination.

A separate cleaning area shall be provided for washing and cleaning equipment and supplies from heavily contaminated areas such as restrooms, drainage drains, trash and waste collection areas.

Where appropriate, food washing areas should be separated from equipment and inventory cleaning areas.

In addition, separate sinks should be provided for hand washing and food washing.

Staff bathrooms and toilets

Toilets and washbasins should be provided to maintain an adequate level of personal hygiene and to avoid contamination of foodstuffs caused by staff actions. These facilities should be conveniently located and should not be used for other purposes such as storage of food and food contact items. These areas shall contain:

- necessary hand washing and drying facilities, including soap (preferably liquid soap), washbasins and, where appropriate, hot and cold running water (or a supply of temperature-controlled water);

- handwashing sinks of hygienic design (ideally taps should not be manually operated); where this is not possible, appropriate measures should be taken to minimize contamination from taps;

- and convenient staff locker rooms if needed.

Handwashing sinks should not be used for washing food and utensils.

Drainage and sewerage system and waste disposal

Adequate drainage and waste disposal systems should be provided and properly operated and maintained.

The design and construction of these systems must ensure that the risk of contamination of food and water supplies can be avoided. The design must ensure that there is no risk of contamination of the food or drinking water supplied

Care should be taken to prevent backflow, accidental connections and the accumulation of sewer gases in the water and sewer mains.

It is important to prevent runoff from highly contaminated areas (such as toilets and raw material production areas) from reaching where finished food products are exposed to the environment.

Wastewater treatment

- The main hazard of production effluents from milk processing plants is the large amount of organic contaminants from equipment washing operations, as well as product residues and

waste products. It is no less dangerous if acidic and alkaline washing agents are discharged into wastewater, which leads to pH changes in the range from 2 to 12 units. Contaminated effluent entering a water body leads to a sharp decrease in the concentration of dissolved oxygen in the water and the death of its inhabitants. Sanitary indicators of the water body sharply deteriorate and it becomes unsuitable for water supply.

- In the pre-treatment stage it is necessary to remove debris, heavy mineral impurities and floating grease - everything that can lead to clogging and breakdown of pumping and other equipment. Traditionally, mechanical grates and grease traps combined with sand traps are used for this purpose. This equipment should be installed at the very beginning of the construction, before the effluent is fed to the averaging tank.

Important aspects of wastewater management

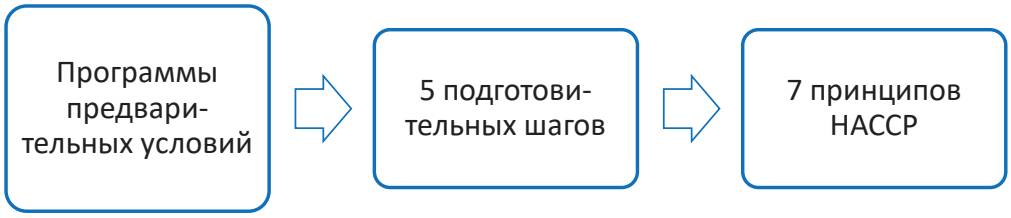
1. Carrying out preventive measures at:
- Residual solids (including sludge)
- foul odor
- the appearance of pests, rats and birds
2. Conducting regular monitoring of treated wastewater
- (pH, COD, WTP, etc.)
- COD: Chemical Oxygen Demand (COD)
- BOD: Biological Oxygen Demand
- SST: Suspended solids

Total flow
Process wastewater➔ Grease trap➔ Waste water treatment➔ Drainage

3. HACCP principles

3.1. A brief description of HACCP and the 12 procedures

The HACCP system is not autonomous and is based on preliminary programs, mandatory compliance with sanitary and veterinary regulations.



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Approach recommended for developing a HACCP program (from the Codex Alimentarius Commission's Food Hygiene Committee Rulebook):

12 HACCP steps:

step 1. establishing a working group
step 2. product description
step 3. defining the area of use
step 4. description of the production process and flow chart
step 5. confirmation of the process and facility layout
step 6. principle 1. Hazard analysis

step 7. principle 2. Identify critical control points (CCPs)
Step 8. Principle 3: Establishing Critical TSC Limits
step 9. principle 4. Establish monitoring procedures for each KCP
step 10. principle 5: Establishing corrective actions
step 11. principle 6. Establish verification procedures
step 12. principle 7. Establish procedures for recording data

Initial challenges in developing HACCP plans:

1. Organize a HACCP team (working group) at the enterprise and approve by order.
2. describe the characteristic of the product produced.
3. Identify the intended use and consumer.
4. Develop a flowchart of the technological process.
5. Confirm block diagrams of the process flow at the production facility

The organization's management should define and document a policy regarding the safety of manufactured products that is practicable and enforceable

The organization's management should define and document policies regarding product safety and ensure that they are implemented and supported at all levels.

The safety policy should be practically applicable and realizable, meet the requirements of state control and supervision bodies and consumer expectations.

The management of the organization should define the scope of the HACCP system for specific types (groups) or names of products and stages of the life cycle, which include production, storage, transportation, wholesale and retail sale and consumption, including catering.

Step 1: Creating a working group

The organization's management should select and appoint a HACCP team that is responsible for developing, implementing and maintaining the HACCP system.

Stage 1. Formation of the HACCP team (working group)

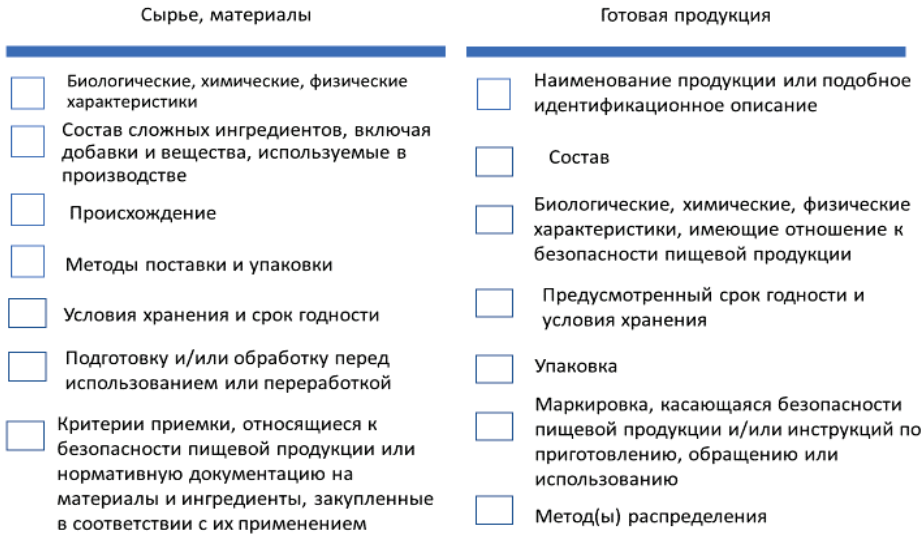
Important aspects of team building are: the number of specialists, the discipline of the member of the working group, special knowledge and experience with the relevant products and processes, assistance from experts from external sources, etc. It is important that the working group should not be formed based on the hierarchical structure of the company! It is important that the working group should not be formed based on the hierarchical structure of the company! The functional responsibilities of the organization's management, members and HACCP team coordinator are developed.

A *HACCP Plan* is a developed food safety program that focuses (aims) to prevent hazards by applying controls from raw materials to finished products, after ensuring that the agreed plan is followed.

The HACCP team should identify and assess all hazards and identify all possible hazards that may be present in the production processes.

Step 2: Description of the product characteristic

To begin a hazard analysis, a complete description of the final product and all ingredients, including customer specifications, must be prepared. This information will help the HACCP team to identify the real hazards associated with the production process:



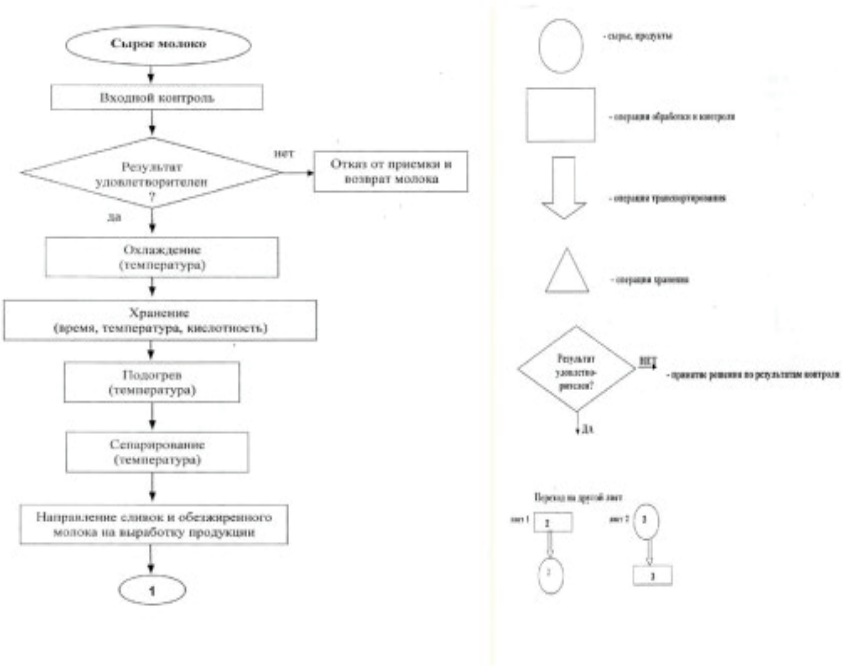
Step 3. Identify the intended use and consumer

An important consideration is how the product will be used. Information on whether it will be consumed directly, cooked or processed will be relevant to the hazard analysis. The target group for the product may also be relevant, especially if it includes susceptible groups such as infants, the elderly. The likelihood of misuse of the product should also be considered, such as the use of pet food as human food, accidentally or intentionally. This information can be recorded in the same form as the product description.

Step 4... Development of block diagrams of the technological process

The first function of the HACCP team is to produce a detailed process flow chart that will give a clearer and more understandable picture of all stages of food manufacturing. The flowchart will help to identify sources of potential contamination and determine methods to eliminate risks. Group discussions will have a more positive outcome if the entire process from raw material to final shipment is compactly depicted in a flowchart.

Example of a flow chart of a process flow:



A list of possible steps in flowcharts:
-transportation of raw materials and ingredients,
-receiving raw materials and ingredients,
- storage of raw materials and ingredients,
- stages of the product manufacturing process,
- components of raw materials and ingredients and their further processing,
- packaging of finished products,
- operations transportation of finished products,
- storage of the finished product, distribution on the sales market,
- The use of the product by the consumer.

Step 5: Confirmation of the block diagram of the technological process at the production site

All members of the HACCP team should visit the production site to compare the information on the flowchart with what actually happens in practice. All members of the HACCP working group should be involved in the flowchart review, with the involvement of responsible staff from the relevant departments.

Such testing is very important, because the rest of the chain of steps will depend on the right process flowcharts.

If the drawn scheme corresponds to the actual situation, it should be approved. For this purpose, the name and surname, position, date of the person who approved the scheme should be indicated on the scheme and the scheme should be prepared with his signature.

To verify the production flowchart, the HACCP working group should take the following actions:

- compare the production flowchart with the existing technological process;
- analyze the production process over the entire production cycle several times at set intervals;
-make sure that the flowchart is correct throughout the process flow, i.e:

- Once the flowchart has been drawn up, it must be tested on the job, as it is impossible to initially take into account all the factors that will affect the production of the final product. For example, there may be some differences in the operation of the first and second shift. In addition, outdated documentation may not take into account the newly installed equipment;

- at this stage, on-site review of production operations is conducted to verify the accuracy and completeness of the flowchart. If any inconsistencies and unpredictable situations are found, the flowchart is modified and documented.

Next, the implementation/monitoring of the 7 HACCP principles should begin.

It is important to understand, HACCP is:

NOT a zero risk system, but it is designed to significantly reduce risk.

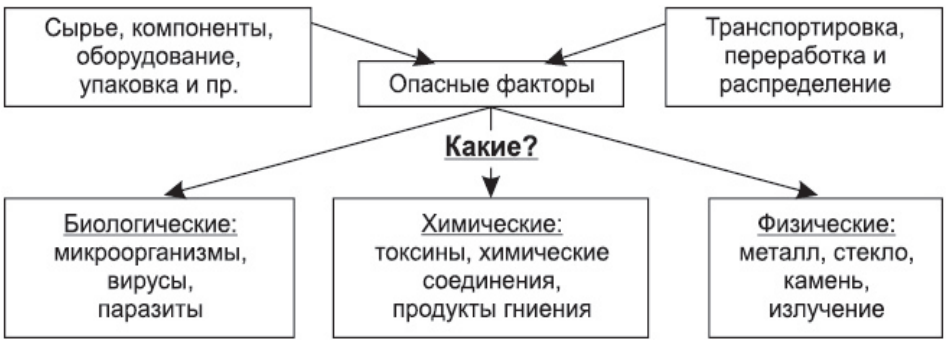
NOT a paper exercise for one time. The system requires daily application and regular revision.

NOT the responsibility of one person, but the result of teamwork by all employees

3.2. Principle 1. Hazard analysis (step 6)

Risk identification involves analyzing the raw materials used and identifying the risks that are expected at each stage of the flowchart from raw material acceptance to shipment of the finished product to the customer. The identified hazards that may occur in each component and at each step of the flowchart must then be analyzed. When assessing hazards, the probability of occurrence of hazards and the severity of health effects on consumers should be considered.

The analysis needs to separate safety issues from food quality issues.



The probability of a hazard occurring is called risk. Once a hazard has been identified, a hazard analysis must be performed to understand the relative risk to human or animal health associated with the hazard. Risk can be assessed subjectively and simply categorized as low, medium, or high. Only those hazards that are deemed by the HACCP team to pose an unacceptable risk of presence are carried forward to the next step.

Conducting a hazard analysis leads to three important results:

1. Possible hazards are identified and their management measures are determined;
2. necessary process changes are identified so that food safety can be assured;
3. A framework for determining critical control points is established (second principle of HACCP).

The hazard identification process is generally conducted in two phases:

Stage 1 - all possible hazards are identified using the brainstorming method.

For this purpose is conducted:

- Analyzing all ingredients used in the product;
- the activities performed at each step of the production process;
- equipment used;
- final product;
- Methods of storing the final product and methods of distribution;
- the intended use of the product by the consumer.

Based on the results of the brainstorming session, a list of potential biological, chemical and physical hazards is created. The list focuses on those hazards that can be directly controlled in the production process.

Stage 2 - those hazards that need to be included in the HACCP plan are identified. For this purpose, each potential hazard is evaluated in terms of the severity of consequences for consumers and the probability of occurrence of this hazard. The hazards are ranked in order of importance.

Biological Hazards (B):

Foodborne biological hazards include bacteria, viruses, molds and other fungi, and insects. These organisms are usually associated with humans and raw materials used in production. Some of them are found in the natural growing environment of food raw materials. Others may originate from the water and processing equipment used in production and may enter raw materials and finished products from the air. Many of them are destroyed in the process of pasteurization, as well as their number can be minimized if the optimal mode of production, storage and transportation is observed.

Biological risks include risks arising from exposure to living organisms, including microorganisms (Salmonella, Escherichiacoli, etc.), protozoa, parasites and their toxins and life products.

<u>For example:</u> what are biological hazards? Biological hazards are dangerous due to food poisoning and the spread of intestinal infections and helminth infections.

Listeria monocytogenes (nonsporiform)	Causes infection with mild flu-like symptoms. Serious forms of listeriosis can develop in people with weakened immune systems and cause septicemia, meningitis, encephalitis and stillbirths

Salmonella (nonsporiform.)	Causes infection with the following symptoms: nausea, vomiting, abdominal cramps, diarrhea, fever and headache. It can be fatal in people with weakened immune systems

Examples of biohazard controls:
- temperature and time control
- heating processes (pasteurization, sterilization)
- cooling and freezing
- fermentation and pH control
- Addition of preservatives (sugar, acids)
- drying,
- source control

Chemical Hazards (H):

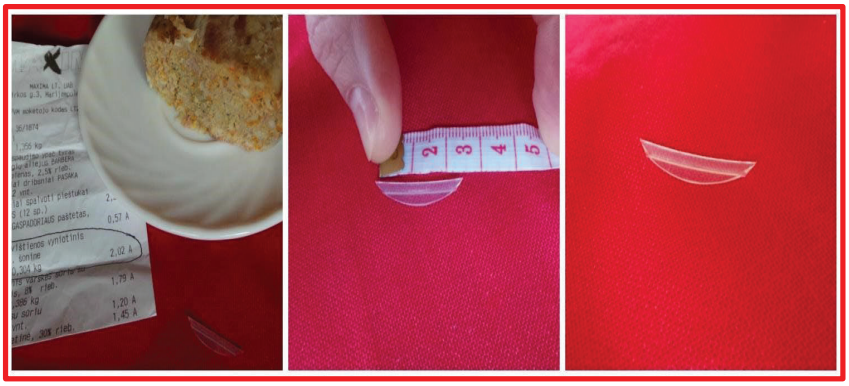
Chemical hazards to human health include hazards from chemical compounds that enter foods during preparation, transportation, or improper storage.
The raw products may include:
- toxins;
- pesticides;
- herbicides;
- antibiotics and other medications.

Chemical hazards also include chemicals used in factories:
- cleaners and detergents;
- disinfectants;
- oils, lubricants;
- paints, pesticides, etc.

Infections from the external environment:
- lead;
- cadmium;
- mercury;
- arsenic;
- RCB (polychlorinated biphenyls)

ПРИМЕРЫ ФИЗИЧЕСКИХ ОПАСНЫХ ФАКТОРОВ

Материал	Возможные травмы	Источники
Стекло	Порезы, кровотечения; может потребовать операции, чтобы найти или удалить	Бутылки, банки, легкая арматура, посуда, gauge covers, etc.
Дерево	Порезы, инфекция, нарушения дыхания; может потребовать операции для удаления	Полевые источники, pallets, коробки, строительные материалы
Камни	Нарушения дыхания, сломанные зубы	Поля, знания
Металл	Порезы, инфекция; может потребовать операции для удаления	Оборудование, поля, провода, сотрудники
Изоляция	Нарушения дыхания; хронические, если асбест	Строительные материалы
Кости	Нарушения дыхания	Неправильная переработка
Пластик	Нарушения дыхания, порезы, инфекции; может потребовать операции для удаления	Упаковка, оборудование
Личное имущество	Нарушения дыхания, порезы, сломанные зубы; может потребовать операции для удаления	Сотрудники



Physical Hazard Control:

Magnet;
Metal detectors;
Screens / Sifters;
Bone Separator;
Visual inspections;
Shooting boards
Preliminary Programs;
Specification Assurance Letters.

The results of the hazard analysis should be documented, either in table or text form.
Example:

Composition or processing steps	*Possible hazards that are introduced, controlled or increased at this stage*	*Does this potential hazard need to be addressed in the NAACP plan? (yes/no)*	*Why? (justification of the decision made in the previous post)*	*What measures will be used to prevent, eliminate, or reduce the hazards in the HACCP plan?*	*Is this step a point of control (POC)? (yes/no)*
1.Acceptance control: raw milk	Biologicals: Presence of pathogens (intestinal pathogens as salmonella)	Yes	The formation and growth of pathogens in raw milk is associated with storage temperature violations. Moderate to severe disease is possible	Late pasteurization	No
	Chemicals: Residues of antibiotics, veterinary drugs	No	Ongoing analysis related to raw milk procurement is necessary. Raw milk with harmful levels of substances is unlikely to be accepted		
	Physical: Presence of foreign objects	No	There may be a foreign body in the milking process. Milk filtration will help to eliminate these substances.		
2.Filtration	Biological	No	-		
	Chemicals: disinfectant residue	No	Redundancy of disinfectants is unlikely due to an effective sanitation program. Low risk of disease and damage.		
	Physical- foreign bodies	No	If the filter screen ruptures, but with proper equipment maintenance and SOPs can eliminate them.		

3.Storage (raw milk)	Biologicals: - Pathogen growth (intestinal pathogens such as Salmonella) - Pathogen contamination Chemicals: - detergent residue Physical	No No No	The formation and growth of pathogens in raw milk is associated with storage temperature violations. Moderate to severe illnesses are possible. The milk storage temperature can be regulated by a water cooling system. Formation of residual microorganisms: - shoddy housekeeping; - air intake. However, it is unlikely with effective PPU operation Excessive disinfectants are unlikely due to an effective PPU program -		
4.Storage (packing)	Biologicals: - pathogen contamination Chemicals: Physical: Contamination by foreign bodies	No No	Poor control of raw materials-open packaging can cause microbial contamination. However, it is unlikely due to the PPU. Poor control of raw materials-open packaging can cause microbial contamination. However, it's unlikely due to the PPU		

5.Weighing (raw milk)	Biologicals: - Pathogen growth (intestinal pathogens such as Salmonella) - pathogen contamination Chemicals: residuals Physical: Presence of foreign bodies	No No No No	The risk of pathogen growth is low because the phase is short-term Formation of residual microorganisms: - shoddy housekeeping; - air intake. However, it is unlikely with effective PPU operation Oversupply of disinfectants is unlikely due to an effective SSOP sanitation program. -	Control of the proper temperature and time of the heating process to kill pathogens - - -	
6. Heating	Biologicals: - pathogenic microorganism residues - growth of pathogenic microorganisms such as Salmonella spp. Chemicals: - excessive detergent Physical: - foreign bodies	No No No	This is the only step in which heating regulates the destruction of pathogens Oversupply of disinfectants is unlikely due to an effective SSOP sanitation program. - -	- - -	CTC 1 (B)
7.Cooling	Biologicals: Growth of heat-resistant spore-forming bacteria Biological- Infection by pathogens Chemicals: - dessert balance	 No	The time interval of the stage is short, so pathogenic microorganisms are unlikely to grow Oversupply of disinfectants is unlikely due to an effective SSOP sanitation program		

	Physical: - foreign bodie	No	-		
8. Bottling and weighing	Biologicals: Biological- Infection by pathogens Chemicals: - dessert balance Physical: - foreign bodies	No No No	Poor cleaning of equipment - can cause contamination by residual microorganisms. The time interval of the stage is short, so pathogen growth is unlikely It is unlikely, due to an effective SSOP sanitation program The likelihood of metal contamination is very high and may result in mild to moderate damage. The risk of metal re-contamination after this stage is low.	 Late stage metal detection	CTC 2 (F)
9. Metal detection	Biologicals: Chemicals: Physical: - foreign bodies (metals)	- - Yes	The likelihood of metal contamination is very high and can result in mild to moderate damage. The risk of metal re-contamination after this stage is low	A functioning metal detector. rejection mechanism	
10.Storage	Biologicals: Chemicals: Physical:	No No No			
11. Pre-departure control	Biologicals: Chemicals: Physical:	No No No			
12.Dispatch	Biologicals: Chemicals: Physical:	No No No			

3.3. Principle 2. Identify critical control points (step 7)

Critical Control Point (CCP) - The stage at which the HACCP system applies the control measures necessary to control a significant risk. (Codex Alimentarius Code of Practice on Principles of Hygiene (CXC1-1969 version) 2020). This is the stage of the process at which controls can be applied and which is essential to prevent or eliminate the hazard or reduce it to an acceptable level. In some sources, critical control points are also referred to as critical control points .

Critical control points are established only for those risks that have been determined to be significant as a result of the risk analysis. Critical control points are established at stages where control is necessary and where deviation could result in the production of potentially unsafe food. The result of the application of controls in the TSC shall be to reduce the level of controlled risk to an acceptable level. (Codex Alimentarius section 2, part 3.7.).

In accordance with paragraph 3 (2) of Article 11 of TR CU 021/2011 "On Food Safety" it is required:

- To ensure safety in the process of production (manufacturing) of food products, the manufacturer shall determine the list of critical control points.

- And also Principle #2 of the HACCP system requires that critical control points be identified in the process.

- There are several points in food production where control of hazards is only possible within certain limits. There are several stages in production where loss of control will result in the manufacture of potentially hazardous food products. These points/steps are the KCPs in terms of HACCP.

There is a linkage of the TSC with the hazard analysis. The result of the hazard analysis:

1.*Significant hazards* (those that actually affect safety) are identified.

2. *Measures to control* (i.e., eliminate, reduce, or avoid) these hazards have been developed.

Thus, the CCP is the point/step in the process at which the measure to control a significant hazard is applied

In most cases, the CCP is not at the same stage where the hazard occurs, but at some later stage.

How do you define a CCP?

Where to install the TSC - at the stage where a significant hazardous factor (SHF) occurs or at the stage where such a hazardous factor can actually be influenced?

CCP at the raw milk acceptance stage? **X**

Is the CCP in the cooling phase? **X**

CCP at the pasteurization stage ✓

So the CCP is not the point/step in the production process where a hazardous factor occurs, but the point/step where such a hazardous factor can actually be influenced.

Each manufacturer must have its own CCP.

The CCP is at each plant are different and may vary depending on the plants design plan, recipe, process, equipment design, ingredient specifics, and pre-program specifics.

How many CCPs should there be?

- The decision is entirely up to the manufacturer
- Often, manufacturers install a CCP even at stages where it is not necessary-but this is the manufacturer's decision
- *It should be remembered that if a point/stage has a CCP in place, then all subsequent HACCP principles must also be followed at that point/stage!*
- A large number of CCPs should alert the developers (it will complicate the monitoring system itself)

- If you get a lot of CCPs - change the technology or strengthen sanitation programs.

The decision tree can be used to determine whether the stage at which a control measure is applied is a critical control point in the HACCP system. The way in which the decision tree is constructed should be flexible.

It depends on whether it describes production, animal slaughter, processing, storage, marketing or other processes. Other approaches, such as consulting experts, may also be used.

In order to find the CCP - regardless of whether a decision tree or other approach is used - it is necessary:

- to assess whether a control measure can be used at the analyzed process step:
  - If a control measure cannot be used at this stage, this stage should be abandoned
  - consider the CCP for this material risk;
  - if the control measure can be used both at the analyzed step and at later steps in the process, or if there is another control measure for that risk that can be used at another step, then the analyzed step should not be considered a CCP.
- determine whether a control measure in one step is used in conjunction with another control measure in another step to control the same risk; if so, both should be considered a CCP. (Codex Alimentarius section 2, part 3.7.).

To define a CCP, a TSC Decision Tree is required

- Helps you determine if a process step is a CCP process step
- Applies to each step listed in the flowchart and 4 questions need to be asked in turn
- Critical limits associated with the hazard (measured/observed parameters and their boundary values) are specified for each CCP.

Decision tree

The application of this method of KCP installation is recommended

Results of answering the questions on the Decision Tree

Stage	*Questions and Answers (Yes/No)*				*Result*
	Question 1	*Question 2*	*Question 3*	*Question 4*	
pasteurization	Yes	Yes			KKT 1

Critical control point (CCP) and control point (CP) are different concepts:

- A control point is any point/step or procedure during a production process where biological, physical or chemical hazards can be controlled, but control there is not safety critical. Even the most short-term loss of a control point jeopardizes safety. Short-term loss of a control point is quickly remedied.

In practice, frequently encountered CCPs and TCs

CCP:

- Heat treatment (temperature, time)
- Addition of ingredients affecting safety
- Technological procedures (filling, capping)
- Cooling, when it is important to reach a certain temperature in a certain amount of time
- Brakering of products in glass containers
- In some cases, cold storage of finished products

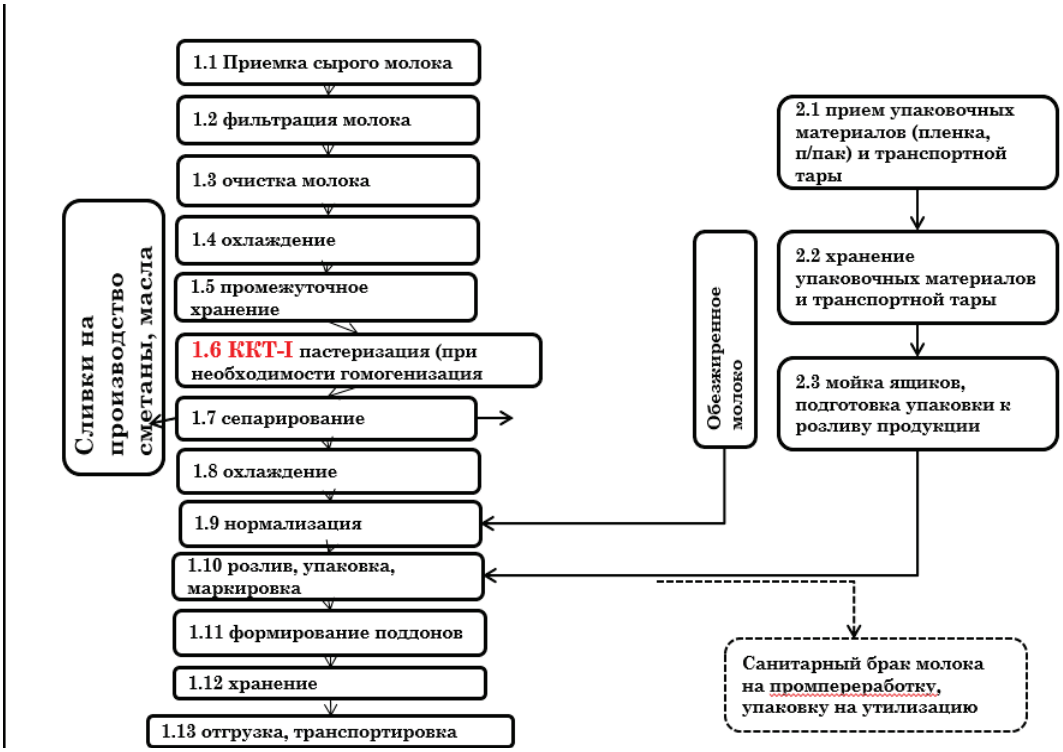
Points of Control:

- Checking quality indicators during acceptance
- Filtration at acceptance
- Pre-treatment of milk before pasteurization
- Bactofugation
- Normalization by fat content
- Adding sourdough starter
- Temperature control in production facilities

Example of a CCP

HACCP plan - pasteurized milk production

*Example: Block diagram of **pasteurized** drinking milk production*



Control of the TSC (typical discrepancies):
There are no limit values at the CCP control location. CCPs and CTs are not labeled on the flowcharts. The HACCP plan does not identify methods and records for rechecking CCP controls (if they are KTD acts, all forms should be numbered). Operators responsible for monitoring the CTDs have not been trained. Hazards from product contamination with allergens have not been assessed.

Critical control points (CCPs)	Risks to be excluded in the HACCP Plan	Critical limits for each control measure	Monitoring				Corrective actions	Verification actions	
			Measurements or observations	Instruments used for monitoring	Frequency	Who monitors/evaluates the results			
Pasteurization of milk /KKT1	Bacteriological: survival of pathogenic m/o, including BSTD, Salmonella, Staphylococcus aureus, Listeria monocytogenes Development of m/o from heat-resistant spores	Temperature from 74 to 76°C, exposure time from 30 to 35 seconds (according to equipment passport). The return valve is triggered when the temperature drops below 74C. No peroxidase	Pasteurization temperature, exposure time	Thermometer recorder, clock	Each party milks	Apparatchik hardware shops Adjuster Laboratory technician Chief Technologist	1. If the return valve has not tripped and/or the temperature has not reached critical limits, stop the plant (apparatus operator); 2. inform the foreman (apparatchik); 3. repasteurize the milk from the tank into another tank; 4. adjust the pasteurized plant (repair), make a test run on water and check the operation of the return valve (adjuster). 5. In case of emergency shutdown, milk that has not been pasteurized should be stored until the acidity reaches 20^0 T, if it exceeds this level, it should be sent for processing or utilized (laboratory assistant, chief technologist).	Preventive maintenance of instrumentation, calibration of measuring instruments Verification of measuring equipment (thermometer, time).	Milk pasteurization control log Technological log of milk production Journal hardware shops thermogram Corrective Action Log

3.4. Principle 3: Setting Critical Limits (Step 8)

The purposes of establishing Critical Limits:

- CLs are established to prevent the development of identified risks in a particular CCP;
- CLs are entered to determine whether the situation in the KCP is under control;
- critical limits must be measurable or observable;
- criteria such as minimum or maximum values of critical parameters associated with a control measure are often used;
- Identify and validate the critical limits for each CCP;
- parameters monitored may include (temperature, time, physical dimensions, humidity, water activity (Aw), titratable acidity and pH, salt concentration, chlorine, preservatives), or on organoleptic parameters such as odor and appearance, use or non-use of preservatives.

Definition of CL

A critical limit is the maximum and/or minimum value by which chemical or physical parameters at a critical control point must be controlled to prevent, eliminate, or reduce to an acceptable level the presence of food hazards.

Critical limits are used to distinguish between safe and hazardous production conditions at a critical control point.

Deviation from the CL indicates the likelihood of unsafe food production.

Critical limits should not be confused with operating limits, which are set for reasons other than food safety

Critical limits can be based on factors such as:

Temperature, time, physical dimensions, humidity, water activity (Aw), titratable acidity and pH levels, salt concentration, chlorine, preservatives, or on organoleptic indicators such as odor and appearance.

For example: Pasteurization of milk

Critical limit (parameters) - temperature not lower than 85^0 C, duration of pasteurization not less than 20 sec.

Critical limits are important to justify and validate.

In many cases, confirmation of critical limits can be done independently by the enterprise through a series of recorded experiments.

Confirmation of critical limits can also be done by an external organization.

Types of critical limits:

- Regulatory Critical Limits (CLs) to guarantee food safety;
- alternative CLs based on available scientific data, existing literature, regulations or instructions of competent authorities, results of scientific research, methodological recommendations
- CLs established by the company itself or by experts for the company, third parties, equipment manufacturers (all documentation-protocols, reports, test results-should be kept).

To evaluate the implementation of critical limit requirements, the health officer (inspector) must verify that:

- Each critical limit established by the enterprise is based on fundamental sources, such as regulations, standards and rules, scientific data, and results of experiments and product testing;
- each CL should have a clear definition of safe and hazardous working conditions;
- CLs are documented in the HACCP Plan and are put into practice in the production steps identified as CCPs;
- has it been determined which measurable and monitored parameters apply to the CCP?
- Are the CLs for these parameters registered?
- Does the controlled process meet official food safety requirements?

A food processing facility should endeavor to establish stricter CLs, for better compliance with all regulatory requirements.

Critical control points (CCPs)	Risks to be excluded in the HACCP Plan	Critical limits for each control measure	Monitoring				Corrective actions	Verification actions	
			Measurements or observations	Instruments used for monitoring	Frequency	Who monitors/evaluates the results			
Pasteurization of milk /KKT 1	Bacteriological: survival of pathogenic m/o, including BSTD, Salmonella, Staphylococcus aureus, Listeria monocytogenes Development of m/o from heat-resistant spores	Temperature from 74 to 76 C, exposure time from 30 to 35 seconds (according to equipment passport). The return valve is triggered when the temperature drops below 74C. No peroxidase	Pasteurization temperature, exposure time	Thermometer recorder, clock	Each party milks	Apparatchik hardware shops Adjuster Laboratory technician Chief Technologist	1. If the return valve has not tripped and/or the temperature has not reached critical limits, stop the plant (apparatus operator); 2. inform the foreman (apparatchik); 3. repasteurize the milk from the tank into another tank; 4. adjust the pasteurized plant (repair), make a test run on water and check the operation of the return valve (adjuster). 5. In case of emergency shutdown, milk that has not been pasteurized should be stored until the acidity reaches 20^0 T, if it exceeds this level, it should be sent for processing or utilized (laboratory assistant, chief technologist).	Preventive maintenance of instrumentation, calibration of measuring instruments Verification of measuring equipment (thermometer, time).	Milk pasteurization control log Technological log of milk production Journal hardware shops thermogram Corrective Action Log

3.5. Principle #4. Establish monitoring procedures for control critical points (Step 9)

In accordance with paragraph 3, subparagraph (4) of Article 11 of TR CU 021/2011 "On Food Product Safety", in order to ensure safety in the process of production (manufacturing) of food products, the manufacturer shall determine the procedure for monitoring critical control points of the production (manufacturing) process.

What is monitoring?

Codex Alimentarius:

Monitoring is the performance of a planned sequence of observations and measurements to determine whether the CCP is under control and to produce reliable records for later use, including verification.

Monitoring should provide this information in a timely manner so that process adjustments and controls can be made to prevent critical limits from being breached.

If improperly controlled and deviations from critical limits occur, a food product that is hazardous to health may be produced.

Monitoring Objective:

- Monitoring the process and identifying trends of approaching critical limits that may necessitate process control.

- Determination of the moment of loss of control (occurrence of a deviation on the CTC).
- Provide written documentation of the operation of the process control system.

Types of Monitoring

- Observation - when we check whether or not something is present (e.g. a supporting document), when we observe that the equipment is operating correctly (e.g. a return valve in a flow pasteurizer operates during a test run).
- In the form of measurements - when we take measurements using measuring instruments (thermometers, chronometers, moisture meters, pH meters, etc.)
- Continuous - when monitoring takes place automatically and continuously without interruption, for example. When a measuring device monitors the required parameters during the entire process - a thermocouple built into the pasteurizer, with the current temperature reflected on an electronic display).
- Periodic - when monitoring occurs at a set interval.

Importance of monitoring for safety - has a direct impact on the safety of the food products produced.

If monitoring indicates a critical limit violation

- Presence of a direct health hazard
- Potential for direct health hazards
- Lack of safety-guaranteeing conditions for product production

Monitoring procedures shall be carried out as prescribed

The manufacturer shall comply with the following:

- Describe in writing the procedures that will be used to monitor each critical control point;
- Ensure that monitoring procedures are followed as prescribed.

Monitoring procedure

Monitoring structure			
What?	How?	How often?	Who?

A procedure is a written procedure that clearly describes the following aspects:

1. *What* is the subject of monitoring?
2. *How is* monitoring done?
3. *How often*, **at** what *frequency is* monitoring conducted?
4. *Who* conducts the monitoring and is responsible for it?

The monitoring procedure should be in writing, so that it can be familiarized to all interested parties.

The monitoring procedure is developed in advance, when developing the HACCP plan, i.e., even before HACCP is implemented.

It should be clear to the monitoring worker how to conduct the monitoring.

WHAT is being monitored, i.e., what specifically we are monitoring.

• The monitoring procedure should clearly define what is being monitored (i.e., what is being monitored)

• Monitoring is conducted for parameters for which critical limits are set

• Measurements of a specific product or process parameter to determine if critical limits are being met

• A monitoring procedure is developed for each critical control point
• Monitoring favors physical and chemical measurements
Example: pasteurization of milk at t 62C - 30 minutes, or at t 71C - 40 seconds.

"HOW?"
• Sequence of actions + tools used
• Monitoring favors physical and chemical measurements

The most common monitoring tools include:
• Thermometers (thermographs),
• Hours,
• Libra,
• pH meters,
• Moisture meters,
• Chemical analysis equipment.

To ensure the effectiveness of the monitoring, the accuracy of the measuring devices must be carefully checked. Measuring devices must be verified and calibrated!

"HOW OFTEN?" (frequency of monitoring)
• Monitoring can be continuous (ongoing) or periodic
• If continuous monitoring of the CTC is not possible, monitoring intervals should be sufficiently short to detect deviations from critical limits
• If monitoring shows a deviation from the KP, it should be assumed that the deviation occurred immediately after the last "positive" monitoring event

"WHO?": (responsibility).
• Responsibility for monitoring may be assigned to the following individuals:
• Process line workers
• Equipment Operator
• Technologist
• Person responsible for receiving raw materials, etc.
• The plant employee responsible for monitoring at the critical control point shall perform monitoring activities strictly as specified in the written monitoring procedure (HACCP plan).
• It is important to remember that the worker responsible for monitoring must be trained to carry out the monitoring procedure!

Documentation of monitoring results
The results of monitoring should necessarily be logged and analyzed
• Recorded by the employee responsible for monitoring
• Analyzed periodically (e.g., once per shift) by a person higher in rank than employees (e.g., shop foreman)

Logging means making immediate entries on monitoring forms/logs.
At a minimum, the monitoring form/logbook should contain the date and time of the entry, the result of the monitoring (e.g., temperature value), and the signature of the person who made the entry.

Analysis of the monitoring log by a superior person:
• Periodically and regularly

Critical control points (CCPs)	Risks to be excluded in the HACCP Plan	Critical limits for each control measure	Monitoring				Corrective actions	Verification actions	
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• To ensure that no deviation from the control is overlooked and to identify trends in deviations

• Date, signature

A prerequisite for monitoring - must be accurate and take place in real time!

The 2 golden rules of monitoring:

1) Monitoring activities are carried out strictly at the appointed time (precisely with the specified frequency)

2) Monitoring results are documented strictly at the time of monitoring

A sample monitoring program is reflected in Annex 4 to these guidelines.

3.6. Principle 5: Corrective Action (Step 10)

According to Article 11 para. 3 (5) TR CU 021/2011 "On Food Product Safety" to ensure safety in the process of production (manufacturing) of food products, the manufacturer shall determine the procedure of actions in case of deviation of indicator values from the established limit values.

What is the "procedure for dealing with deviations"?

Codex A l l i m e n t a r i o u s

Corrective action is the procedure to be followed when a deviation from the critical limits is detected on a TSC. The manufacturer shall develop specific corrective actions for each TSC by which deviations from critical limits will be eliminated.

The procedure for dealing with a deviation is what is called corrective action in HACCP.

No real business can do without situations where deviations occur on the TEC. It is not necessary to treat deviations as a mistake or fault of the enterprise and hide it. For example: electricity may go out, pasteurizer may fail, refrigeration equipment may malfunction, etc. It happens to everyone. *The main thing is how the enterprise reacts to the deviation.*

If monitoring at the TQC indicates that a deviation from the established critical limits has occurred, this means that the products produced under violated critical limits are potentially hazardous. Corrective actions are needed to respond to this situation.

Specific corrective actions need to be developed by which deviations will be addressed for each TSC.

Corrective actions consist of the following activities, which shall:

- eliminate the manifestation of the deviation (i.e., eliminate the critical limit violation) and bring the process back under control;
- find the cause and fix it;
- to decide what to do with the exhausted products;
- take measures to prevent the occurrence of such deviation in the future.

Correction is an action to correct an identified nonconformity.

Corrective action refers to the handling of potentially hazardous products and can therefore be used in conjunction with corrective actions

Corrective action may be recycling, further processing, and/or elimination of harmful effects of nonconformities (e.g., directed for other uses or specific labeling).

Corrective actions - actions aimed at eliminating the causes of detected nonconformities or other undesirable situation.

Corrective action procedure

Corrective action procedures to be developed in advance and described in the HACCP plan.

The procedures are based on the formula "If... (brief statement of the nature of the deviation), then... (order of action).

Each corrective action procedure should describe both the corrective actions and the corrective actions themselves, and should contain a defined set of activities.

Should summarize variance options and corrective action options.

Describe the immediate actions of the person responsible for the procedure: what to do immediately and who to tell.

Describe the actions to identify the causes of deviations and to return the KCP to control.

Describe actions to prevent future deviations.

Describe actions to be taken with respect to products released in violation of critical limits.

The sequence of operations for a product developed under deviation conditions includes the following:

Step One: Determine if the product poses a security risk by considering:

(a) Expert evaluation;

c) results of physic-chemical and microbiological tests.

Stage Two: If, based on the results of the first stage assessment, no hazard exists, the product can be used for its intended purpose

Step Three: If a potential hazard exists (based on the results of the assessment in Step One), determine if the product can be used:

(a) Recycle;

c) direct safe use.

Step Four: If the operations on a potentially hazardous product in Step Three are not possible, the product should be destroyed. This option is usually the most expensive and is considered the last resort.

The retained product must be subjected to a safety assessment. If the product is safe (the deviation was minimal and did not affect safety), the product can be returned to the process. Accordingly, if the product is found to be unsafe, the most typical corrective action options for such products include:

- transferring the affected product or ingredients to another process line where the deviation that occurred would not be considered critical;
- retreatment;
- non-food referral;
- product destruction.

The enterprise shall establish and maintain documented information that describes appropriate actions to identify and correct the cause of non-conformances in order to prevent recurrence of the non-conformance and to bring the process back under control after the non-conformance has been identified.

These actions shall include:

- analyzing non-conformities identified by customer and/or end-user complaints and/or reports from regulatory authorities;
- Analyzing trends in monitoring results that may indicate a loss of control;
- Establishing the cause(s) of the non-compliance;
- identifying and implementing actions to ensure that the non-compliance does not recur;
- documenting the results of corrective actions taken;
- verification of corrective actions taken to confirm their effectiveness.

Documentation of corrective action implementation is the manufacturer's defense in the event of potential litigation with the consumer in the event of food deviations.

The company should document all corrective actions in protocols. The form of the protocol can be any form convenient for the manufacturer - for example, a report filed in a folder, a log, etc.

Corrective action protocols shall contain:

- identified deviation
- immediate debugging actions, where applicable
- information vertical
- reason for retention of products produced under deviation conditions
- retention date and time
- quantity retained
- conditions for further use and/or return of products to the technological process
- the person who decides on the further use of the product
- date/signature of the person responsible for the corrective action
- date/signature of the person who analyzed the protocol (higher in rank)

Protocols shall be subject to inspection by authorized employees of the company, who are higher in rank than the person who drew up the protocol.

In some cases, not all possible violations of critical limits can be foreseen in advance. In addition, sometimes a new hazard arises that may pose a threat to product safety. In such cases, the plant should have a standardized corrective action sequence that will allow the equipment operator/monitor/responsible person for corrective action to avoid confusion.

In the event of an unanticipated deviation (for which there is no predetermined corrective action procedure) or an unanticipated hazard, the company must:

- separate and retain affected products at least until control is resumed and the deviation is corrected;

- Conduct an analysis to determine the marketability of the affected products;

- implement, where possible and necessary, actions with affected products to ensure that unsafe products do not enter the trade of products that may cause harm to consumer health by deviating from critical limits;

- Re-evaluate the HACCP plan to determine whether a new identified deviation or new unanticipated hazard should be included in the HACCP plan.

In this case, also draw up an act of corrective action.

It is important that the responsibility for corrective actions is clearly defined and a responsible person is designated. As with those responsible for monitoring, it is useful to assign responsibility for corrective actions to those workers who, by virtue of their job responsibilities, are located and work at the stage of the process at which the KCP is installed. These workers should, at a minimum, carry out the corrective actions. Since the corrective action procedure also includes a reporting vertical, the worker should clearly know who exactly needs to be informed in case of deviation. Then more complex situations will be handled by more competent persons. However, it is very important that all persons mentioned in the corrective action procedure follow the procedure strictly as written.

Plant management must realize that employees responsible for corrective actions must be trained on how to perform them. This usually involves on-the-job training.

It is also important to remember that the documents resulting from corrective actions should be periodically reviewed by a person higher in rank than the employee responsible for the corrective action. This is to ensure that all corrective actions for deviations have been implemented correctly and that potentially hazardous products will not be shipped out of the facility.

Example of corrective actions for deviations from critical limits in the pasteurization stage (CTC):

The plant has a flow-through pasteurizer equipped with a return valve - i.e. pasteurization takes place while the milk is passing through the coil. The duration of pasteurization is ensured by the speed of milk flow, which in turn depends on the diameter of the pipe. In case of temperature drop in the pasteurizer, the return valve returns the milk for re-pasteurization. If the return valve does not work, the plant will not be able to react immediately to a temperature deviation, so it is extremely important to check its operation, and its improper operation is one of the possible deviations. This is why the return valve is *given such attention in corrective actions*

Critical control points (CCPs)	Risks to be excluded in the HACCP Plan	Critical limits for each control measure	Monitoring				Corrective actions	Verification actions	
			Measurements or observations	Instruments used for monitoring	Frequency	Who monitors/evaluates the results			
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3.7. Principle 6. Establish verification procedures (verification) (step 11)

Verification (verification) - confirmation of compliance with established requirements by providing objective evidence.

When a HACCP plan has been developed and all CCPs have been validated, it should be checked at regular intervals.

This should be the task of a HACCP team specialist with detailed knowledge of the production process. In this way, the appropriateness of the TSC and control measures can be determined and the extent and effectiveness of monitoring can be verified.

Ways in which you can test your HACCP plan in action include:

- collection of samples for analysis by a method other than the monitoring procedure;
- conversations with staff, especially CCP observers;
- Supervision of activities in the CCP;
- A formal audit by an independent person.

1 example of some activities to test the HACCP system:

- review of monitoring record documents;
- review of record documents from critical limits;
- verification of technological operations;

- analytical analysis of products (primarily microbiological) with the involvement of external organizations;
- calibration of measuring instruments (verification), etc.

2 example of verification procedures:

Action	*Frequency*	*Responsible*	*Control*
Verification of the planning procedure	Annually or when the HACCP plan changes	HACCP Team Leader	Head of organization
Verification of KCP monitoring as described in the plan (e.g., cooking temperature monitoring)	According to the HACCP plan (e.g., once per shift)	According to the HACCP plan (e.g., line dispatcher)	According to the HACCP plan (e.g. quality control department)
Verification of corrective action monitoring records to show compliance with the plan	Once a month	Quality Assurance Division	HACCP group
Comprehensive verification of the HACCP plan	Once a year	Independent expert(s)	Head of organization

3.8. Principle 7. Establish procedures for data recording (step 12)

Effective and accurate record keeping is essential for the application of a HACCP system. HACCP procedures should be documented. The documentation and record keeping should be appropriate to the nature and size of the operation and should be sufficient to help the enterprise verify that HACCP controls are in place and properly implemented.

HACCP materials developed by subject matter experts (e.g., industry HACCP guidelines) may be used as an element of this documentation, but provided that these materials reflect the specifics of the particular operations of a given food establishment.

Critical control points (CCPs)	Risks to be excluded in the HACCP Plan	Critical limits for each control measure	Monitoring				Corrective actions	Verification actions	
			Measurements or observations	Instruments used for monitoring	Frequency	Who monitors/evaluates the results			
Pasteurization of milk /KKT 1	Bacteriological: survival of pathogenic m/o, including BSTD, Salmonella, Staphylococcus aureus, Listeria monocytogenes Development of m/o from heat-resistant spores	Temperature from 74 to 76 C, exposure time from 30 to 35 seconds (according to equipment passport). The return valve is triggered when the temperature drops below 74C. No peroxidase	Pasteurization temperature, exposure time	Thermometer recorder, clock	Each party milks	Apparatchik hardware shops Adjuster Laboratory technician Chief Technologist	1. If the return valve has not tripped and/or the temperature has not reached critical limits, stop the plant (apparatus operator); 2. inform the foreman (apparatchik); 3. repasteurize the milk from the tank into another tank; 4. adjust the pasteurized plant (repair), make a test run on water and check the operation of the return valve (adjuster). 5. In case of emergency shutdown, milk that has not been pasteurized should be stored until the acidity reaches 20^0 T, if it exceeds this level, it should be sent for processing or utilized (laboratory assistant, chief technologist).	Preventive maintenance of instrumentation, calibration of measuring instruments Verification of measuring equipment (thermometer, time).	Milk pasteurization control log Technological log of milk production Journal hardware shops thermogram Corrective Action Log

Examples of such documentation include, but are not limited to:

- HACCP team composition;
- Risk analysis and scientific justification for including some risks in the plan and excluding others;
- CCP definition;
- determination of critical thresholds and scientific justification of the set values;
- validation of control measures; and
- changes made to the HACCP plan.

Examples of accounting data are:

- KCP monitoring activities;
- deviations and associated corrective actions; and
- verification procedures performed.

A simple record-keeping system can be very effective and its data can be easily communicated to staff. It can be an element of existing operations: existing documents such as delivery notes and statements, such as product temperature data, can be used to maintain records. Where appropriate, records can also be maintained electronically.

Objectives

• Understand the importance of record keeping in documenting compliance with the HACCP plan

• Defining HACCP account types

• Record retention requirements and regulated access to HACCP documents

HACCP Credentials:

• This is proof that the HACCP plan is being followed (regulatory requirements for products with mandatory HACCP certification)

• Document the safety of the product

• Provide tools to explore potential problems

There are four types of records:

1. Hazard Analysis Summary
2. HACCP plan
3. Supporting documentation
4. Daily (routine) records of transactions

Hazard Analysis Summary:

• Records of the discussion and decisions of the HACCP team members:

• A complete hazard analysis

✓ Potential hazards have been identified
✓ The hazards have been assessed as sufficient
✓ Justification of decisions
✓ Selection of control measures

Accounts in the HACCP Plan

It is recommended that entries in the HACCP plan include:

✓ List of HACCP team members and assigned responsibilities
✓ Product description, distribution, intended use and customers
✓ Confirmed diagram of the operational flow with the KKT
✓ HACCP Plan Summary Table.

Create a HACCP plan summary table containing information for:

- Steps in the process that are KKT
- Risk
- Critical limits
- Monitoring*
- Corrective Actions*
- Verification procedures*
- Documentation procedures*

* A brief summary of the provision, on performance of activities, procedures and frequency shall be provided.

Example of a HACCP plan summary table						
KKT	Risk	Critical limits	Monitoring	Corrective actions	Checking	Recording

Supporting Documentation (HACCP Plan Justification)

- Definition and Establishment:
  - ✓ KKT
  - ✓ Critical limits
  - ✓ Monitoring procedures
  - ✓ Corrective actions
- Verification/Verification Procedures

Summary of preliminary programs supporting the HACCP system

Daily transaction records

- Record monitoring
- Corrective Action Reports
- Verification and validation records

Good Documentation Practices:

- Using the right shape
- Accurate and legible
  - ✓ Errors corrected with initials present, no erasure
- The time of observation does correspond
  - ✓ There are no pre-recordings
  - ✓ No entries later
- File organization, easy to access.

All records must include:

- Name and location of the processor
- Date and time of activity
- Signature or initials of the responsible person
- Identity of product and production code, where applicable
- Actual observations or data obtained during monitoring

Document Archiving System:

- Controlling the archiving of documents is very important
- HACCP plan, charts, forms, SOPs and other instructions must be relevant to the current situation
  - ✓ Obsolete materials should be eliminated
- Computerized records
  - ✓ Ensuring the integrity of data and signatures

Record Review:

- Conducted by a qualified professional
  - ✓ Ensure that all HACCP plan requirements are accurately documented
- Documented by signing and dating the record
- Used to identify deficiencies in accounting and other procedures

Documentation:

Prescribed Risk Analysis and HACCP Plan:

✓ must be signed and dated by the most responsible person on site or the highest authority;

✓ must be signed and dated upon initial acceptance, without any modification or verification and acknowledgement.

Record Storage:

• Regulatory requirements for the retention of HACCP records:

✓ At least 1 year - livestock slaughtering activities, perishable refrigerated products.

✓ At least 2 years - frozen, canned or shelf-stable foods.

• Products not regulated by HACCP

✓ Product shelf life and other regulatory requirements must be considered.

Other record retention requirements:

• Low-acid canned and leavened foods

✓ 3 years

• Maximum retention periods for product records should be adhered to.

Regulatory access to records:

• HACCP records must be made available to the inspector upon request

• HACCP records copied by a state inspector could potentially be released to the public

• Companies should develop SOPs for documentation access protocols.

In general, the implementation of a HACCP system involves continuous monitoring, record keeping, corrective actions and others as described in the HACCP plan.

4. HACCP inspection

4.1. Principles and behaviour of the inspector (auditor) based on ISO9001 standard

Critical control points (CCPs)	Risks to be excluded in the HACCP Plan	Critical limits for each control measure	Monitoring				Corrective actions	Verification actions	
			Measurements or observations	Instruments used for. monitoring	Frequency	Who monitors/evaluates the results			
Pasteurization of milk /KKT 1	Bacteriological: survival of pathogenic m/o, including BSTD, Salmonella, Staphylococcus aureus, Listeria monocytogenes Development of m/o from thermotolerant spores	Temperature from 74 to 76 C, exposure time from 30 to 35 seconds (according to equipment passport). The return valve is triggered when the temperature drops below 74C. No peroxidase	Pasteurization temperature, exposure time	Thermometer recorder, clock	Each party milks	Apparatchik hardware shops Adjuster Laboratory technician Chief Technologist	1. If the return valve has not tripped and/or the temperature has not reached critical limits, stop the plant (apparatus operator); 2. inform the foreman (apparatchik); 3. repasteurize the milk from the tank into another tank; 4. adjust the pasteurized plant (repair), make a test run on water and check the operation of the return valve (adjuster). 5. In case of emergency shutdown, milk that has not been pasteurized should be stored until the acidity reaches 20^0 T, if it exceeds this level, it should be sent for processing or utilized (laboratory assistant, chief technologist).	Preventive maintenance of instrumentation, calibration of measuring instruments Verification of measuring equipment (thermometer, time).	Milk pasteurization control log Technological log of milk production Journal hardware shops thermogram Corrective Action Log

HACCP inspection (inspection, audit) requires knowledge of HACCP principles and the ability to apply (inspect) them in practice.

At the same time, HACCP inspection requires knowledge of:

- of the EAEU legislation and the national legislation of the Kyrgyz Republic,
- production technology,
- Microbiological and chemical food hazards,
- sanitation and hygiene issues,
- basics of operation of technological equipment, control-measuring devices, quality management, etc.

In conducting an inspection (audit) of HACCP, sound value judgments should be made, with the inspection of HACCP principles having the character of advising and assisting in their organization and compliance.

Personal Qualities:

Auditors should have the necessary attributes to be able to act in accordance with the principles of auditing.

Auditors should conduct themselves in a professional manner while performing audit activities.

Desired competencies mean to be:

- ethical (moral), i.e., impartial (fair), truthful, sincere, honest, and discreet;
- open to discussion, i.e., willing to consider alternative ideas or points of view;
- diplomatic, i.e. able to behave tactfully with people;
- observant, i.e. actively cognize the surrounding reality and activities;
- perceptive, i.e. intuitively feeling and being able to understand situations;
- flexible (versatile), i.e. easily adaptable to different situations;
- persistent, i.e., acting persistently, focusing on achieving goals;
- decisive, i.e. draw conclusions in a timely manner based on logical inferences and analysis;
- Self-confident, i.e. acting and behaving independently while interacting effectively with others;
- a strong spirit, i.e. to act responsibly and ethically, even when the actions taken may be unpopular and lead to outcomes that others do not agree with or oppose;
- ready to improve, i.e. to draw the right conclusions (lessons learned) from situations;
- culturally sensitive, i.e., become familiar with and act in accordance with the culture of the audited organization;
- willing to cooperate, i.e., interact effectively with others, including audit team members and staff of the audited organization.

The auditor should be able to:

- Understand the types of risks and opportunities associated with audits and the principles of a risk-based approach to audits;
- Plan and organize work effectively;
- to conduct the audit in accordance with the agreed schedule;
- Prioritize and focus on those issues that are essential;
- Communicate effectively orally and in writing;
- Gather information through effective interviews, hearings, observations, and analysis of documented information, including records and data;
- Understand the acceptability and implications of using case sampling techniques for audits;
- Understand and take into account the opinion of technical experts;
- Audit a process from start to finish, including its interaction with other processes and, where appropriate, different functional structures;
- verify the applicability (relevance) and accuracy of the information collected;
- confirm the sufficiency and acceptability of audit evidence to support audit findings and audit conclusions;
- Evaluate those factors that may affect the reliability of audit results and audit conclusions.

4.2. State regulatory requirements for the inspection of production

The requirements to the safety of food products and the processes of their production and turnover are established by the technical regulations of the EAEU. Meanwhile, state supervision over compliance with the requirements of technical regulations is determined by the national legislation of the Kyrgyz Republic.

State supervision in the KR is based on risk assessment.

Main normative legal acts of the KR regulating state supervision:

- Law of the Kyrgyz Republic "On the Procedure for Conducting Inspections of Entrepreneurial Entities" dated May 25, 2007, No. 72
- Resolution of the Government of the Kyrgyz Republic dated February 18, 2012, No. 108 "On Approval of the Criteria for Assessing the Degree of Risk in Business Activities"
- Resolution of the Cabinet of Ministers of the Kyrgyz Republic dated February 07, 2022 No. 60 "On issues of state control (supervision) over compliance with the requirements of technical regulations".

In accordance with the Law of the Kyrgyz Republic "On the Procedure for Conducting Inspections of Entrepreneurial Entities", inspections of milk and dairy production enterprises are carried out both in a planned and unplanned manner (in the presence of appeals or complaints).

Scheduled inspections are formed 3 months in advance before the start of the inspection and are agreed with the Ministry of Economy and Commerce of the Kyrgyz Republic. The procedure for conducting scheduled and unscheduled inspections is established by the Law of the Kyrgyz Republic "On the Procedure for Conducting Inspections of Entrepreneurial Entities".

In accordance with the Resolution of the Government of the Kyrgyz Republic dated February 18, 2012 № 108 "On approval of criteria for assessing the degree of risk in the implementation of entrepreneurial activities", the activities of enterprises for the production of milk and dairy products refers to a high degree of sanitary and epidemiological risk (processing of food raw materials, production of food products). At the same time, scheduled inspections are carried out no more than twice a year.

Scheduled inspections are carried out strictly in the presence of check (check) sheets approved by a joint order of the Department of Disease Prevention and State Sanitary and Epidemiological Surveillance of the Ministry of Health of the Kyrgyz Republic and the Ministry of Economy and Commerce of the Kyrgyz Republic.

How are HACCP requirements verified?

- HACCP requirements are included in the scope of the inspection
- Inspections are conducted on checklists (include HACCP requirements)
- Based on the results of the inspection, the Inspection Report (and other documents, e.g., test reports, prescriptions, etc.) is issued

In 2022, new check (check) sheets incorporating HACCP requirements were approved by joint order of the Department of Disease Prevention and State Sanitary and Epidemiological Surveillance of the Ministry of Health of the Kyrgyz Republic (Order No. 109 dated October 4, 2022) and the Ministry of Economy and Commerce of the Kyrgyz Republic (Order No. 171 dated October 3, 2022). The form of the check-list is in Annex 1 to these Guidelines.

International, regional and/or national standards may be used to meet the requirements of technical regulations.

Codex Alimentarius standards can also be applied in the territory of the Kyrgyz Republic.

4.3. HACCP inspection

Stages of HACCP system validation:

−Conducting the first interview;
−Conducting Risk Analysis self-monitoring by the inspector;
−Evaluating the Company's Risk Analysis;
−Evaluation of the HACCP plan
−Verification of records and evaluation
−HACCP non-compliance report

First interview
−Necessary to conduct the HACCP verification process:
−Merchandise assortment
−Today's production plan
−Production line
−Start-up and shutdown times
−Night shift (presence or absence)
−Storage and shipment situation for production today
−Intended use

Selection of the target product to be tested
Inspection/audit of a product that has a higher probability of food safety hazards
Product identified in a past inspection/audit/verification
Spot inspection
Product for which there have been complaints / seizure / any food safety incident in production;

Conducting an initial risk analysis
Prior to the initial risk analysis by the inspector, it is not necessary to verify the HACCP plan, the documented SOPs of the production itself.
Even if there is no HACCP plan for the product, the inspector should confirm that actual processes are in place. In this case, it should be determined whether or not the required operational method is in place.

Risk self-assessment by the inspector:
−Create a block diagram;
−Describe the operational content of each process;
−Interviews with the production manager and with the responsible employee on the unit;
−Description and assessment of potential risks;
−Assessment of control measures for significant risks;
−Other (issues regarding PRPs/GMPs)

Creating a block diagram
Establish the production process from receiving raw materials to shipping finished products
Confirmation of the production process from acceptance to shipment of the final product
Establish the content of the process, the person responsible and the duration of each process

Observation of operating processes
−Data on inspections during the inspection
−Receiving and storage of raw materials

−The duration of each process and the presence or absence of stagnation

−Degree of process stagnation (possibility of unforeseen biological risks caused by process stagnation)

−Changes in product temperature during the process

−Use of nutritional supplements

−Condition of machinery and equipment (possibility of contamination by metal shrapnel)

Interviews with the head of production and representatives of the block

−Supplier of raw materials

−Content and condition of acceptance control

−Raw product information from suppliers

−Heat sterilization conditions (time and temperature)

−Shelf life in the refrigerator as a whole

−Product storage temperature

−Longest shelf life

−Corrective actions for expired products

Description and assessment of potential risks

Importance to consider that the description of potential risks:

The likelihood of occurrence is there or not;

Significant risks or not;

(do potential risks need to be closely monitored or not?)

Assessment of control measures for significant risks

Are there any process specific controls in place to control significant risks?

−Time and temperature control of the heat sterilization process

−The process of metal detection into metal fragments

The inspector may find non-compliance that is not covered by the HACCP system, in which case the inspector should describe these points.

This is especially true for the initial HACCP inspection.

For example:

−Improper cleaning of premises and equipment\ Improper treatment of equipment

−Spoilage/ rejection of raw materials

−Contamination by foreign objects during the process

Assessment of production risk analyses

Block diagram comparison

If there is a discrepancy between the production and the inspector, it must be resolved through:

−Clarification to the responsible officer

−Control traversal for block diagram comparison

Comparison of risk analysis

List of potential risks for the production inspector

Consideration of significant potential risks according to the list of

Control measures

Established critical control points

Evaluation of the HACCP production plan

- Developing a HACCP plan
- Signature of the HACCP plan (company authorization)
- HACCP plan requisites
- Risks, critical control points and critical limit of the HACCP plan
- Monitoring procedures
- Format of monitoring records
- Corrective action procedures
- Verification procedures
- Validation procedures

HACCP plan requisites

- Establishing a critical control point for significant risks identified by the inspector during the risk analysis ?
- Are critical limits set for each critical control point?
- Is the critical limit appropriate?
- Are monitoring procedures described for each critical limit?
- Are monitoring procedures consistent in terms of methods and frequency?
- Is the format of the monitoring records set?
- Are corrective action procedures described for each critical limit?
- Is the corrective action procedure described in accordance with the HACCP plan?
- Have the Critical Control Point monitoring instruments been calibrated?
- Is the calibration procedure in terms of method and frequency consistent?
- Have appropriate methods and frequencies of compliance been established?

Verification Procedures:

The three constituent verification procedures:

- Record Review;
- Calibration of monitoring instruments (includes other instruments)
- Product testing

Validation processes

Validation is part of the verification system

- The company confirms that the HACCP plan controls identified risks in the validation process;
- The company has supporting documentation as it has been established for each critical control point;
- For example: milk processing:
- Confirmation of pasteurization time and temperature for a large number of microorganisms;

Frequency of validation checks:

- At least one year after the initial HACCP plan is developed
- Any change in processes can affect the risk analysis

Evaluation of the implementation of the HACCP plan

- Confirmation of the actual operation of the HACCP plan
- Monitoring is conducted as an established method of the HACCP plan
- Is monitoring conducted according to the established frequency of the HACCP plan?

– Are the monitoring instruments configured and usable properly?
– Are the monitoring instruments in working good condition?
– Are the monitoring instruments validated according to the established HACCP plan?
– Is the monitoring data recorded instantly and accurately?
– In case of deviation from the operating limit, are corrective actions taken?
– Are the corrective actions recorded properly?
– Any method of verification, such as product testing conducted in accordance with the HACCP plan, is conducted?
– Are the results of the verification method recorded appropriately?

Verification of records and evaluation
– The record is complete and correct
– The specified critical limit is suitable
– If the critical limit is not appropriate, take appropriate corrective actions
– Product verification and/or testing is conducted in accordance with the HACCP plan
– Record checks are conducted at the appropriate time.

Verification of records and evaluation
Required documents for evaluation:
– Monitoring recording
– Records of corrective actions of critical control points
– Inspection records
– Sanitation monitoring records

HACCP non-compliance report
– Observational data should be described
– A simple and concise explanation
– Accessible explanation from the production side
– The report should contain material issues, the results of observations should reflect on potential risks
– For conciseness, the report should be sorted by the content of the observations
– The report's conclusion should not be based on a personal viewpoint and on an unjustified assessment

Specific instances of non-compliance with HACCP
– Incorrect entries
– In cases of deviation from critical limits, corrective actions have not been taken. Or not carried out properly
– Critical control points are not monitored or inadequate monitoring activities are in place
– The HACCP plan is not available, despite its necessity
– The HACCP plan is not in compliance. Measures to control some/all significant risks are not in place
– HACCP records are missing. Or non-compliance records are missing

List of abbreviations

HACCP	Hazard Analysis and Critical Control Points (literal translation "Hazard Analysis and Critical Control Points")
SOP	Standard operating procedures
ND	Regulatory documents (documentation)
TND	Technical normative documents
ACC	Production control program
Sanitary Regulations	Sanitary and epidemiological rules and regulations
KKT	Control critical point
TR CU	Technical Regulations of the Customs (Eurasian Economic) Union
EAEU	Eurasian Economic Union
JCS	General intestinal diseases
OKI	Common intestinal infections
B/L.	sick leave
NCD	Non-communicable diseases
OPPO	Operators of food processing plants
PDCA	PDCA cycle (Plan-Do-Check-Act: Plan-Do-Check-Act).
KP	Critical limits

Annex 1

Form of check (check) sheet

Approved
Joint orders of the Ministry of Economy and Commerce of the Kyrgyz Republic
dated **October 03**, **2022, No. 171.**

Department of Disease Prevention and State Sanitary and Epidemiological Surveillance of the Ministry of Health of the Kyrgyz Republic
dated **October 04**, **2022, No. 109.**

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CHECKLIST
for organizations engaged in the production of milk and dairy products
with the act of sanitary-epidemiological survey

№ _____ "____" _____ 202__ г.

The body that ordered the inspection: _____
Full name of the specialist(s) who conducted the inspection:
_____
_____
number of the service ID and position of the person(s),
Precept for inspection: _____
_____
date and number of the prescription (order, instruction) on the basis of which the inspection is conducted
_____

Name and address of the auditee being audited:

_____

_____

In attendance: _____

(Full name of the representative of the audited entity present)

_____

Type of inspection and purpose of the survey: _____

_____

_____

Inspection period: from_____ to_____ time: _____

(commenced, completed)

Проверяемый период_____

ИНН: _____

Телефон: _____ факс: _____

E-mail address: _____ @ _____

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№№	gr.	Questions/requirements	regulatory document	yes	no	not required	note
General requirements. Food safety documentation							
1.	б	Availability of production control program, confirmation of appointment of responsible persons	art.10, art.11TR TS 021/2011 Ch.14 TR CU 033/2013 Ave. 1 PPKR #201 dated 11.04.2016.				
2.	а	There are documents confirming the origin, quality and safety of the finished products.	p.1, p.3, art. 5, , art. 23TR TS 021/2011 Ch.14 TR CU 033/2013				
3.	б	Food raw materials and ingredients have documents confirming their origin, quality and safety	п. 3. Art.5 of TR TS 021/2011 Ch.4 TR CU 033/2013				
4.	б	The packaging material (closures) has documents confirming safety	п. 10. art. 5 TR TS TS 005/2011 Ch.11 TR CU 033/2013 Art.7 TR CU 005/2011				
5.	б	Tests of product samples were carried out in an accredited testing laboratory	Art.10 TR CU 021/2011				
Enterprise - Facilities and Equipment Project.							

Requirements for layout and structure							
6.	б	Are the layout and routing in the plant building and the production flows and movement of personnel such that cross-contamination can be prevented?	Title 3, subsection 3.1 Codex Alimentarius (CXC 1-1969)				
7.	б	Are areas with different levels of control separated to minimize cross-contamination by means of walls or partitions and/or location?	Title 3, subsection 3.1 Codex Alimentarius (CXC 1-1969)				
8.	б	Compliance with the distance to the nearest public or residential building (sanitary protection zone). Availability of fences and green areas around the perimeter of the industrial enterprise.	Pr.3. PPKR #201 dated 11.04.2016.				
Requirements for production and auxiliary premises							
9.	б	Wall surfaces made of water-resistant, washable and non-toxic materials that can be washed and disinfected	Art. 14 para. 5 TRTS 021/2011				
10.	б	Ceilings or, in the absence of ceilings, the interior surfaces of roofs and structures are finished to prevent the accumulation of dirt, mold, reduce condensation	Art. 14 para. 5 TRTS 021/2011				
11.	б	Floor surfaces made of water-resistant, washable and non-toxic materials, has surface runoff	Art. 14 para. 4 TRTS 021/2011				
12.	б	Doors with a flat and non-absorbent, easily cleanable surface, open outwards from the production areas	clauses 5-6 of Article 14 TRTS 021/2011				
13.	б	Layout, area of production facilities ensure the implementation of technological operations in	item 1 of article 14 of TR CU 021/2017				

		accordance with regulatory (technological, technical) documentation					
14.	б	The flow and consistency of the technological process are ensured. There are no collision or cross flows of food (food) raw materials and food products, contaminated and clean inventory and containers	p.1. part 1 of article 14 of TR CU 021/2011				
15.	б	Production facilities are protected against the entry of animals, birds, rodents, insects. Insecticidal lamps are available.	p.1. part 3 article 14 TR CU 021/2011				
16.	б	The opening exterior windows (transom windows) are equipped with insect screens that can be easily removed for cleaning.	Art.14 TR CU 021/2011				
17.	б	Hand washing sinks with hot and cold water supply, with hand washing facilities and hand wiping and/or drying facilities are available in sufficient quantity.	п. 2 part 4. art. 14 OF TC TS 021/2011				
18.	б	Required areas are equipped with germicidal lamps or other means of preventing or minimizing air pollution	p.1. part 2ct.14 TR CU 021/2011				
19.	б	Production facilities are equipped with natural or artificial lighting	p.2 part 2. article 14 TR CU 021/2011				
20.	б	The design of lighting fixtures prevents glass splinters from getting into products, lighting fixtures are not placed over open process equipment	Art.14 TR CU 021/2011 Ch. 3, Ch. 4. Ave. 28. PPKR No. 201 dated 11.04.2016				
21.	б	Is the lighting such that it does not adversely affect the ability to detect defects? The					

		brightness should be appropriate to the nature of the operations	3.2.6 Codex Alimentarius (CXC 1-1969				
22.	б	Whether appropriate natural or artificial ventilation mechanisms are in place for: -Minimizing airborne food contamination such as aerosols or condensate droplets? -Humidity control .	3.2.5 Codex Alimentarius (CXC 1-1969)				
23.	б	Supply and exhaust ventilation is equipped, access to filters and other parts for their cleaning is available	item 2 part. 1. art. 14 TR TS TS 021/2011				
24.	б	Is the ban on smoking tobacco or consuming caffeine-containing products on the premises* enforced? *Note: *"premise" is.* *is any space having a roof and/or bounded by one or more walls or partitions, regardless of the type of materials used for the roof, wall or partitions, and regardless of whether the structure is permanent or temporary.*	Art 13 KR Law No. 121 of 15.09.2022				
25.	б	Is there a sign prohibiting smoking (consumption) of tobacco and nicotine, including the use of water pipes (hookah), tobacco heating systems and other smoking accessories, as well as the use of ESDN (including electronic cigarettes) in the production premises*?	Law of KR dated 15.09.2022 No. 121 Order of the Ministry of Health of KR dated 20.01.2022 No. 57				
26.	а	Are hazardous substance storage containers labeled and locked to prevent, intentional or accidental contamination of food products?	3.2.1 Codex Alimentarius (CXC 1-1969)				

27.	bb	Does the facility allow for separation of raw materials from prepared/processed foods and allergenic and non-allergenic foods?	3.2.7 Codex Alimentarius(CXC 1-1969)				
28.	б	Are designated areas for cleaning utensils and, if necessary, small equipment located away from extremely contaminated areas such as restrooms and waste collection?	3.2.2 Codex Alimentarius (CXC 1-1969)				
29.	б	Equipped with toilets, the doors of which do not open into the production facilities and equipped with hangers for working clothes before entering the vestibule, equipped with washbasins with hand washing facilities;	п. 2 ч. 3 of Art. 14 TRTS 021/2011				
30.	б	Are sanitary and epidemiological requirements for toilets observed?	Pr.26. PPKR No. 201 of 11.04.2016				
31.	б	Sewage equipment in the production facilities is designed and executed in such a way that there is no risk of contamination of food products	item 7 of article 14 TRTS 021/2011				
32.	б	Whether conditions for storage of food (edible) raw materials, packaging materials and food products are provided (storage room).	п. 1 part 7 of article 14 TRTS 021/2011				
33.	б	Are there sufficient facilities for staff clothing and footwear?	pts.3, 4. art.14 TR CU 021/2011				
OPERATIONS CONTROL (or FACTUALLY GMP)							
34.	б	Are product specifications available?	Section7: 7.1.1 Codex Alimentarius (CXC 1-1969)				
35.	б	Are the product specifications complete and meet the content criteria in compliance?	7.1.1 Codex Alimentarius (CXC 1-1969)				

36.	б	Do the procedures include monitoring methods, identification of responsible persons and frequency of sampling and monitoring records to be maintained?	7.1.3 CA (CXC 1-1969)				
37.	б	In case of deviation from the above monitoring results, are corrective actions taken?	7.1.4 CA (CXC 1-1969)				
38.	a	Is there a time and temperature control system with set temperatures and allowable limits to control processing steps, including cold storage and freezing?	7.2.1 CA (CXC 1-1969)				
39.	б	Are temperature and control devices checked for accuracy and calibrated at regular intervals?	7.2. CA (CXC 1-1969)				
40.	б	Are maintenance and inspection activities performed on equipment to prevent contamination by physical hazards?	7.2.5 KA (CXC 1-1969)				
41.	б	Are detection or screening devices such as metal detectors calibrated and / where applicable?	7.2.5 KA (CXC 1-1969)				
42.	б	Are there procedures in place for staff to follow in the event of glass breakage?	7.2.5 KA (CXC 1-1969)				
43.	б	Are additives and/or food processing aids used in accordance with GMP.Are the results of application recorded ?	7.2.6 CA (CXC 1-1969)				
44.	б	Are controls in place to prevent cross-contact of allergen-containing foods with other foods? For example; separate and/or identified storage facility	7.2.7 CA (CXC 1-1969)				
Requirements for technological and other equipment							
45.	б	Technological equipment is working properly	Art.15 TR CU 021/2011				
46.	б	The equipment operation rules are observed in accordance with the instruction (passport).	Art.15 TR CU 021/2011				

		Documentation (log, schedule) for inspection of the technical condition of the equipment is available					
47.	**б**	Working surfaces of technological equipment and inventory are made of non-absorbent and anti-corrosive materials	p.3. art.15 TR CU 021/2011				
Requirements for ensuring the safety of food raw materials, auxiliary materials, packaging and finished products							
48.	б	Whether supporting procedures based on HACCP principles have been developed and implemented	Art.10 TRTS 021/2011				
49.	б	Is a food safety (HACCP) team established, consisting of a multidisciplinary team?	TR CU 021/2011 Art. 10				
50.	б	Have (a) final product specifications been established for products manufactured at the facility?	TR CU 021/2011 Art. 10				
51.	б	Has the intended use or intended consumer group been identified?	TR CU 021/2011 Art. 10				
52.	б	A traceability system has been implemented, which makes it possible to identify the supplier of raw materials and ingredients, as well as to whom the enterprise delivered the finished product	p.3, part 12, article 10 TR CU 021/2011 Ch.9 TR CU 033/2013 Art. 13 para. 1 п. 8 Ch. 2, Annex 1, Chapter 2, Annex 1, PPQR				

			No. 201 of 11.04.2016.				
53.	б	Has one or more flowcharts of the product(s) produced in the company been prepared?	TR CU 021/2011 Art. 10				
54.	б	Does the flowchart indicate inputs (receiving) (ingredients, water, processing, packaging materials) and outputs (waste, recycling)?	TR CU 021/2011 Art. 10				
55.	б	Has the blockchain been verified and the date of verification confirmed?	TR CU 021/2011 Art. 10				
56.	б	Has a hazard analysis been completed?	TR CU 021/2011 Art. 10				
57.	б	Does the hazard analysis include a risk assessment?	TR CU 021/2011 Art. 10				
58.	a	The list of hazardous factors that may lead in the process of production (manufacturing) to the release of hazardous food products into circulation has been determined and documented	item 3, part 1, article 11 TR TS TS 021/2011				
59.	б	A list of critical control points of the production (manufacturing) process is defined and documented	item 3, part 2, article 11 TR CU 021/2011				
60.	б	Limit values of parameters monitored at critical control points are defined and documented	p.3 of part 3 of Art. 3 part 3 of article 11 of TR TS TS 021/2011				

61.	б	The procedure for monitoring critical control points of the production process is defined	item 3, part 4, article 11 TR CU 021/2011				
62.	б	If one or more KKTs have been identified, are critical limits set?	Art. 10 TR CU 021/2011				
63.	б	Has a monitoring system been developed for the KCP?	Art. 10 TR CU 021/2011				
64.	б	Does the monitoring system include information or corrective actions in case of deviations?	Art. 10 TR CU 021/2011				
65.	б	Corrective and remedial actions are performed	p.3 para. 5. art. 11 OF TC TS 021/2011				
66.	a	There is a document (certificate of verification/calibration certificate) confirming the verification/calibration of measuring instruments that provide monitoring of the KCP	item 3, part 4, article 11 TR CU 021/2011				
67.	б	Are verification procedures established to confirm that the HACCP system is working? Such as: - Results of microbiologic testing. - Internal Audit Findings. - Results of cleaning and sanitation.	Art. 10 TR CU 021/2011				
68.	б	Establishes the periodicity of inspection for compliance of food products released into circulation	para. 3 part. 6.art. 11 TC TS 021/2011				
69.	б	Have the elements of the HACCP system been documented?	TR CU 021/2011				
70.	б	Are records of monitoring activities available?	TR CU 021/2011				

71.	б	Documents on the implementation of safety measures in the process of production (manufacturing) of food products, including documents confirming the safety of unprocessed food (edible) raw materials of animal origin, on paper and/or electronic data carriers and their storage are maintained and available.	p.4. art. 11 of TR CU 021/2011				
72.	б	Is the prohibition on carrying out repairs to production facilities at the same time as milk and dairy products are being produced?	part 8 of article 14 of TR CU 021/2011				
Requirements for water supply							
73.	a	Drinking water used for production of food products complies with the requirements of the legislation, the results of laboratory testing of drinking water for safety indicators are available.	Law of KR TR dated April 21, 2011 Art.12 TR CU 021/2011				
74.	б	Whether there is a water supply scheme with indication of water quality and safety control locations	Art.12 TR CU 021/2011				
75.	б	Whether the water supply system is divided into technical and domestic water supply (if necessary). Marking of pipelines	п. 3, 1h., Art. 12 TR TS TS 021/2011				
76.	б	Whether steam is used in contact with the food product (blanching, etc.) If yes, safety confirmation is carried out	п. 2 part 2 of article 12 TR TS TS 021/2011				
77.	б	Is ice used as part of a food product? If yes, safety confirmation is carried out	п. 2 ч. 3 part 3 of article 12 of TR CU 021/2011				
78.	б	Whether documents confirming water quality and safety are available	Art.12 of TR CU 021/2011				
Storage and transportation of raw materials, food products and supplies							

79.	a	Finished and raw products are stored separately	p.4 art.13 TR TS TS 021/2011				
80.	б	The rules of commodity neighborhood are observed: there is zoning by types of products, labeling on the shelves of racks is available	art. 10,11,13,14 TC TS 021/2011				
81.	б	The volume of storage space corresponds to the quantity of products accepted for storage. There are enough pallets, shelves and racks available in sufficient quantity	p.4 art.13 TR TS TS 021/2011				
82.	б	It is possible to identify products (labeling is available) stored in the storage room, including those intended for daily production. Stored products comply with the labeling	art. 17 TR CU 021/2011 p.6 ch.3 TR TS TS 033/2011;				
83.		Is transportation (conveyance) of food products carried out by means of transport in accordance with the conditions of transportation (conveyance) established by the product manufacturer?	Clause 2, Article 17 TR CU 021/2011 Section 9 9.2 Codex Alimentarius (CXC 1-1969)				
84.		Are the requirements observed when using vehicles and/or containers for transportation (conveyance) of different food products or food products and other cargoes simultaneously under conditions that exclude their contact, contamination and change of organoleptic properties of food products?	p.3, p.4 of Art. 17 of TR CU 021/2011 Section 9 9.2 Codex Alimentarius (CXC 1-1969)				
85.		Does the design of cargo compartments of vehicles and containers ensure protection of	clause 3, clause 4, clause 6				

		food products from contamination, penetration of animals, including rodents and insects, cleaning and washing disinfection?	Art 17 TR CU 021/2011 Section 9 9.2 Codex Alimentarius (CXC 1-1969)				
86.	б	Conditions are observed to prevent spoilage and protect raw materials and components from contaminants and cross-contamination. Storage is carried out in closed containers (supplier's containers, production containers)	p.4 of Art. 13; item 7 of article 17 of TRTS 021/2011 ch. 6 OF TC TS 033/2011; Section 9 9.2 Codex Alimentarius (CXC 1-1969)				
87.	а	Expiration dates of products are observed. There are no expired products	clause 7, clause 8, clause 12 art. 17 TRTS021/2011; Ch. 7 TR CU 033/2011;				
	б	There are documents (certificate of verification/calibration certificate) confirming verification/calibration of measuring instruments confirming compliance with temperature and humidity conditions of storage and transportation	p.2 of article 15 of TR CU 021/2011				

88.	б	Records are kept on the results of control of storage conditions	item 3 of part. 11 part 11 of article 10 of TR CU 021/2011				
89.	б	Records of cleaning and disinfection of chambers and storage area for food raw materials and supplies are available	p.3 part. 7 part 7 of article 11 of TR CU 021/2011				
90.	б	Premises, cold rooms (ceilings, floor, walls, lamps) are kept in proper sanitary and technical condition	art. 14TRC TC 021/2011				
91.		Does the owner of dairy products independently take measures to withdraw from circulation food products that do not comply with the requirements of technical regulations?	p.4 art.5 TR TS TS 021/2011 CCPD No. 93 dated July 29, 2021 In accordance with CA (CXC 1-1969) Version 2020 Subsection 7.5				
92.		Does the procedure include the contact details of the competent authorities in case of revocation?	7.5 KA (CXC 1-1969)				
93.		Does the procedure describe that the review should be retained as documented information?	7.5 KA (CXC 1-1969)				
94.		Are the requirements to the processes of utilization of food products and food raw materials that do not meet the established requirements, including expired food products, observed?	Art.5, Art.18 TR CU 021/2011				

95.	б	Are food products in storage accompanied by information on storage conditions?	Clause 9 of Article 17 of TR TS TS 021/2011				
96.	б	Iodized food salt is used in the process of food preparation. The conditions of salt storage are observed.	Z of KR "On prevention of iodine deficiency diseases" from 18.02.2000 N 40;				
Requirements for labeling and packaging of finished products							
97.	б	Finished products intended for sale are packaged in packaging that ensures safety and preservation of consumer properties of products to the established requirements	art.4TR TS 022/2012 *art.6 TR TS 005/2011 Ch.11,12 TR CU 033/2013				
98.	б	Labeling of the consumer package of products is made by clear, easily readable, complete, reliable information regarding the name, composition, quantity, date of manufacture, shelf life, storage conditions (including after opening the package), name and location of the manufacturer (importer), method of manufacture and consumption, nutritional value, presence of GMOs, identification, single sign of circulation (conformity).	Art.4 TR CU 022/2011 Ch.11, 12, 15 TR CU 033/2013 TR CU 029/2012				
99.	б	Labeling is made in the state and official languages, imported products are labeled in Russian and state languages	Art.4 TR CU 022/2011 Ch.11 TR CU 033/2013				

100.	б	In food labeling "date of manufacture" or expiration date ("good until") is realized with the indication of hour, number, month in case of expiration date up to 72 hours, number, month in case of expiration date from 72 hours to 3 months, month, year or number, month, year in case of expiration date more than 3 months	TR CU 022/2011 Ch.11 TR CU 033/2013				
101.	б	Whether it is marked with a single circulation mark established by the legislation of the Customs Union.	p.2, Art.5 TR TS TS 021/2011				
102.	б	Labeling contains information about allergens	paras. 13,14 ч. 4.4 of Art. 4 TR TS TS 022/2011 Ch.11 TR TS				
Washing, disinfection of transport, production facilities and equipment, deratization, disinsection							
103.	б	Washing and sanitization (disinfection) of vehicles (cargo compartments, containers, etc.) is carried out	item 6 of article 17 of TR TS TS 021/2011				
104.	б	There is a plan-schedule for washing and disinfection of production facilities and equipment	п. 3 ч. 7 part 7 of article 11 of TR TS TS 021/2011				
105.	б	Instructions for sanitizing equipment and supplies are available at workplaces	Art.15 TR CU 021/2011				
106.	б	Verification of washing and disinfection performance is performed regularly	п. 3 art.10 TR TS TS 021/2011				
107.	б	Are detergents and disinfectants used in accordance with their accompanying instructions ?	Section 5 and Section 20 of the USPTO				

108.	б	The organization is provided with cleaning equipment, detergents and disinfectants in the required quantity	п. 3 art.11 TR CU 021/2011				
109.	б	There are facilities for storage and handling of cleaning equipment, detergents and disinfectants. Cleaning equipment is labeled	п. 3 art.11 TR CU 021/2011				
110.	б	Plans for deratization and disinsection are in place, and records of work performed are kept	p.3 art.11 TR TS TS 021/2011				
111.	б	Are the premises of the enterprise free of insects and rodents, synanthropic birds and animals?	Art.10, Art.14 TR CU 021/2011				
112.	б	Are traps and detectors in place and located to prevent food contamination both inside and outside the building?	5.2 Codex Alimentarius (CXC 1-1969)				
113.	б	Have the causes of the infestation been identified and prevention measures taken to avoid recurrence?	5.2 Codex Alimentarius (CXC 1-1969)				
114.	б	Are records of pest infestation, monitoring and eradication kept?	5.2 Codex Alimentarius (CXC 1-1969)				
115.	б	Are facilities in proper working order to prevent access by pests? For example Openings and drains are protected No holes under the doors	5.2 Codex Alimentarius (CXC 1-1969)				
116.	a	There are separate storage rooms for storage of preparations used in disinsection, deratization and disinfection with observance of temperature and humidity	p.4 art.14 TR CU 021/2011				

117.	б	Are cleaning and disinfection methods periodically reviewed and are the results of the reviews documented?	5.1.3 Codex Alimentarius (CXC 1-1969)				
Waste management							
118.		Metal containers with a lid are used for garbage collection, installed on a solid base and with observance of gaps from production and auxiliary premises	п. 1, 3 of Art. 16 TR TS TS 021/2011				
119.		Waste in accordance with the category is separately placed in labeled, in good condition and used exclusively for the collection and storage of such waste and garbage, closed containers.Waste is disposed of regularly	Item 1 p3 of Art.16 TRTS 021/2011				
120.	б	A place for waste storage in labeled containers has been allocated, waste storage rules are complied with	п. 5 art.16 TR TS TS 021/2011				
121.	б	The design of waste storage tanks ensures that they can be cleaned, washed, disinfected and protected from animal ingress	п. 4 art.16 TR CU 021/2011				
122.	б	Are drainage and waste disposal systems in place?	3.2.1 Codex Alimentarius (CXC 1-1969)				
Personnel. Personal hygiene. Staff training.							
123.	a	Personnel have undergone compulsory (preliminary and periodic) medical examinations and have medical books on health status	п. 6 of Art. 11 of TRTS 021/2011, PPR KR 225				
124.	a	Daily monitoring of staff health is carried out and the results of monitoring are documented.	п. 7 of Art. 11 of TR CU 021/2011				
125.	б	Rules for access to the facility by outside visitors are observed. A visitor log (records) is kept	Art.10 TR CU 021/2011				

126.	б	Personnel are provided with sanitary and protective clothing.	п. 3, part 9, article 10 TR TS TS 021/2011 Article 214 Labor Code of the Kyrgyz Republic TR CU 019/2011				
127.	а	Are requirements for the provision of soap or other handwashing detergent, toilet paper, disposable towels or hand drying facilities complied with?	Pp. 4.part 1, article 14 021/2011				
128.	б	The rules of personal hygiene are observed: the work is carried out in clean sanitary clothes, change of shoes, no jewelry, work (with gloves) in headgear. Food is not accepted in production areas	п. 3, part 9 of article 10, paragraph 5 of article 11 of TR CU 021/2011				
129.	б	Instructions on hand washing and disinfection are available at workplaces	Art.10 TR TS 021/2011				
130.	б	Is the prohibition on storing personal belongings of special clothing, personal belongings and shoes of indoor plants directly at the production site observed?	Art.10,p.14. TR CU 021/2011				
131.	б	Availability and staffing of a first aid kit with a set of medicines for emergency medical aid in production shops	Article 217 Labor Code of the Kyrgyz Republic				
132.	б	Are there staff training programs in place?	4.1 Codex Alimentarius (CXC 1-1969)				
133.	б	Do supervisory and management personnel have knowledge of food hygiene principles to be able	4.2 KA (CXC 1-1969)				

		to identify deviations and take appropriate action?					
134.	б	Periodic evaluations of the effectiveness of the trainings conducted are conducted.	4.3 KA (CXC 1-1969)				
135.	б	Are refresher courses held periodically?	4.4 KA (CXC 1-1969)				
136.	б	Are training records kept?	4.4 KA (CXC 1-1969)				

This checklist is based on:

- Law of the Kyrgyz Republic "On Public Health" of July 24, 2009, No. 248;
- Technical Regulations of the Customs Union "On the Safety of Food Products" TR TS 021/2011;
- Technical Regulations "On the safety of milk and dairy products" TR TS TS 033/2013;
- Technical Regulations of the Customs Union "On Packaging Safety" TR TS005/2011
- Technical Regulations of the Customs Union "Food products in terms of their labeling" TR TS 022/2011;
- Technical Regulations of the Customs Union "Requirements for the safety of food additives, flavorings and technological auxiliaries" TR TS 029/2012;
- Law of the Kyrgyz Republic "On the Procedure for Conducting Inspections of Entrepreneurial Entities" dated March 27, 2007;
- Technical Regulations of the Customs Union TR TS 019/2011 "On the Safety of Personal Protective Equipment";
- Labor Code of the Kyrgyz Republic No. 106 of 04.08.2004.
- Law of the Kyrgyz Republic Technical Regulations "On Drinking Water Safety" No. 34 of 21.04.2011;
- PCR Resolution on Approval of Public Health Acts No. 201 of April 11, 2016 (Attachment 1), (Attachment 28)
- Decree of the Cabinet of Ministers of the Kyrgyz Republic "On authorized state bodies for state control (supervision) over compliance with the requirements of technical regulations of the Eurasian Economic Union" dated June 21, 2021 No. 34
- Law of the Kyrgyz Republic "On protection of health of citizens of the Kyrgyz Republic from the consequences of tobacco consumption, nicotine and exposure to ambient tobacco smoke and aerosol" from September 15, 2021 № 121;
- Order of the Ministry of Health of the Kyrgyz Republic "On approval of the requirements for the sign banning smoking (consumption) of tobacco and nicotine, including the use of water pipes (hookah), systems for heating tobacco and other smoking accessories, as well as the use of ESDN (including electronic cigarettes) and the procedure for its placement" from January 20, 2022 № 57

- Resolution of the Cabinet of Ministers of the Kyrgyz Republic "On Issues of State Control (Supervision) over Compliance with the Requirements of Technical Regulations" dated February 7, 2022 No. 60
- Uniform sanitary-epidemiological and hygienic requirements for products (goods) subject to sanitary-epidemiological supervision (control) approved by the Decision of the Commission of the Customs Union of May 28, 2010 № 29;
- Contravention Code of the Kyrgyz Republic No. 128 of 28.10.2021.
- PP KICR On Amendments to Certain Decisions of the Government of the Kyrgyz Republic Regulating the Maximum Staffing Level and Conditions of Remuneration of Employees Not Classified as Civil Servants" dated July 29, 2021 № 93
- Codex Codex Alimentarius - General Principles of Food Hygiene (CXC 1-1969), version 2020.

Inspection act/ results of a planned inspection:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Information on familiarization or refusal to familiarize with the results of the audit:_____
_____
_____
_____

Head (representative) of the subject of the audit:

_____ _____
signature

_____

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_____
Full name, position

An official of the authorized body:

_____ _____
_____ signature
_____
Full name, position

10. Laboratory results of the selected samples:

10.1.	**Б.**	**Results of microbiological studies**				
10.2.	**Б.**	**Results of physicochemical studies**				

The result of the control test and conclusions:

_____
_____
_____
_____
_____
_____

Result of applying the checklist	% score	score
Scope of activities		
Results of previous inspections		
Bottom line:		

The number of set points determines the frequency of inspection:
(based on CCPD February 18, 2012, No. 108)

_____
_____
_____

Information on familiarization or refusal to familiarize with the results of the audit:_____
_____
_____

Head (representative) of the subject of the audit:

_____ _____
_____ signature
Full name, position

An official of the authorized body:

_____ _____
_____ signature
Full name, position

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Annex 2

Necessary scope of studies and their multiplicity in the course of treatment preliminary and periodic medical examinations

№№	*Name of laboratory tests*	*Profile examination*	*Frequency*	*Note*
1.	syphilis blood test	Dermatovenerologist	once a year	
2.		ENT (otorhinolaryngologist)	once a year	
3.		Fluorography	once a year	
4.		Narcologist	once a year	
5.		Psychiatrist	once a year	
6.		Dentist	once a year	
7.		Therapist	once a year	
	Bacteriologic testing for intestinal infections:			
8.	for helminth eggs		once a year	Entries in the personal medical book
9.	for staphylococcus aureus		once a year	Entries in the personal medical book
10.	for typhoid fever		once every 10 years	Entries in the personal medical book
11.	Hygienic training (sanitary minimum)		once a year	or in accordance with the mark in the medical booklet
	Vaccinations from:			
12.	hepatitis B		once in a lifetime	
13.	hepatitis A		once in a lifetime	
14.	measles, rubella, mumps		under 35	
15.	diphtheria		once every 10 years	
16.	dysentery		annually	

Annex 3

Form for the Health and Pustular Disease Examination Log for Employees

№	Date	NAME	Profession	A note on the absence of DCD in the employee and his/her family	Note that the employee has no sore throat or pustular diseases	Cont-rol for b/l care (diagnosis)	Work authorization	
							Signature of the officer responsible for the inspection	Employee signature

"Zd" is healthy;
"Suspended" - suspended from employment;
"otp." - vacation;
"W" is a day off;
"B/L" - sick leave

Annex 4

Example: monitoring during the pasteurization phase
HACCP Plan - pasteurized milk

КТК /стадия процесса	Опасный(-ые) фактор (ы), которые контролируются на КТК	Критический предел	Процедуры мониторинга					Корректирование и корректирующие действия/ Ответственность/ Протоколы	Верификация (проверка)
			Измерения или наблюдения	Приборы, используемые для мониторинга	Частота	Кто выполняет мониторинг/оценивает результаты	Прото-колы		
1	2	4	5	6	7	8	9	10	11
1.6 Пастеризация **КТК №1**	**Биологические:** Выживание патогенных м/о, в т.ч. ***БГКП, Salmonella Staphylococcus aureus Listeria monocytogenes*** Развитие м/о из термоустойчивых спор	Возвратный клапан срабатывает при падении ***t ниже 84^{0}C*** Температура ***не ниже 85°C*** Длительность пастеризации ***не менее 20 с*** (согласно паспорта на оборудование) **Пероксидаза *отсутствует***	Пробный запуск пастеризатора на воде, визуальная проверка работы возвратного клапана Визуально по показателям термограммы и термометра Лабораторное исследование на наличие пероксидазы	Термодатчик Цифровое табло пастеризатора Термометр Термометр, датчик температуры, самописца устанавливается автоматически согласно паспорта на оборудование	Перед началом пастеризации и каждый раз при аварийной остановке Постоянно в течении всего процесса (термограмма), снятие показаний с внешнего термометра каждые 30 минут.	Аппаратчик по переработке молока Сменный мастер Лаборант химической лаборатории Лаборант химической лаборатории	Журнал контроля пастеризации молока СМК-02-02 Технологический журнал производства молока восстановленного СМК-02-01-1 Термограмма Журнал контроля пастеризации СМК-03-25 Журнал контроля производства пастеризованного молока СМК-03-14		Испытания

9. 監査員のための衛生管理マニュアル（農業省獣医衛生検査院）

Manual on Food Hygiene in the field of veterinary and sanitary requirements for VS inspectors of the Ministry of Agriculture of the Kyrgyz Republic (FLAQUM project)

Veterinary Service

Ministry of Agriculture

2023

Table of Contents

Manual on Food Hygiene in the field of veterinary and sanitary requirements for AF inspectors of the Ministry of Agriculture of the Kyrgyz Republic (FLAQUM project)

Introduction

These Guidelines on HACCP inspection in food enterprises in the field of veterinary and sanitary requirements are developed within the framework of the FLAOUM project "Improving human resource development of food laboratories to improve the quality of milk and dairy products in the Kyrgyz Republic" for inspectors of the Veterinary Service under the Ministry of Agriculture of the Kyrgyz Republic, in fulfillment of Article 10 p. 2 of TR EAEC 021/2011 "On food safety".

All enterprises involved in the circulation of food products (producers-farms), distributors-purchasers), transporters-collectors), wholesalers and retailers, cafes and restaurants) are obliged to develop, implement and maintain food safety based on HACCP principles according to the traceability of milk and dairy products.

1. National legislation

1.1 The Law of the Kyrgyz Republic "On Veterinary Medicine" dated December 30, 2014, No. 175

This Law defines the legal, social, organizational, financial and economic bases in the field of veterinary medicine and is aimed at protecting the population from diseases common to humans and animals, ensuring epizootic well-being and veterinary and sanitary safety on the territory of the Kyrgyz Republic.

Chapter 3: Veterinary and sanitary measures and participation of parties

Article 9: Registration of activities on production, processing, storage and sale of products and raw materials of animal origin

Persons engaged in the production, processing, storage, sale of products and raw materials of animal origin are obliged to register with the authorized state body on veterinary medicine in accordance with the procedure established by the legislation of the Kyrgyz Republic.

1.2 Rules "On the procedure for execution and issuance of veterinary supporting documents" of 29.06.2022 No. 159)

Raw materials of animal origin from the farm to the point of milk collection or to the processing plant is strictly accompanied by VS Form No. 2a, registration of vet certificate in the form (all fields are filled in) by a private veterinarian, a / a, according to traceability, including animal health and epizootic well-being of the territory for particularly dangerous animal diseases.

Chilled raw milk from the milk collection point to the processing plant is accompanied by VS Form No. 2, issued by the departmental veterinarian of the milk collection point, according to VS Form No. 2a, issued by the veterinarian, a/o.

At the same time, strict control is exercised over the safety of raw materials and products of animal origin, veterinary medicines, feed and feed additives, as well as taking measures to protect the environment during utilization.

STATE INSPECTORATE FOR VETERINARY AND PHYTOSANITARY SECURITY UNDER THE GOVERNMENT OF THE KYRGYZ REPUBLIC

Form No. 2a

region, district (city)
_____ is issued by private (official)
aiyl aimak, village veterinarians for raw materials and _____
products within the republic
Name of veterinarian

VETERINARY certificate " ____ " _____ 202___.

I, the undersigned veterinarian, have issued this veterinary certificate

_____ _____
(кому - наименование юридического

_____ _____
or full name of a natural person)

in that _____
(name of the product or raw materials of animal origin according to the technical regulations of the CU)

in quantity _____ _____ _____
(places) (pieces, kg) (packaging) (labeling)

produced_____
(name of the enterprise or full name of the owner)

_____
_____ (address, subjected to preliminary veterinary inspection, date of production, time of shipment, temperature of chilled raw material)

_____
__

и признана годной

_____
(for processing, sale without restriction, with restriction - specify reasons)

Проведены диагностические исследования:_____

_____
____
(No. and date of laboratory examination, result of the examination)

направляется_____
__ (mode of transportation, vehicle number, route)

_____
____ (name and address of the recipient) (No. of shipping documents)

условия автотранспорта

_____
(interior surface of cargo compartments and containers made of washable and non-toxic materials)

(cleaning, washing with potable water, disinfection with what solution, no non-food products)

The products have been subjected to additional laboratory tests

_____
_____ (name of laboratory, No. of examination and results of examination)

ОСОБЫЕ ОТМЕТКИ:

_____
(specify epizootic well-being of the area)

The certificate shall be presented for control at loading, en route and handed over to the consignee. Copies of the certificate are invalid. If violations of the order of filling in the form are established, the certificate shall be submitted to the chief state veterinary inspector of the district at the place of cargo exit, indicating the identified violations.

M.P. PHE _____
Full name of veterinarian (full name)

_____
Position, signature

1.3 Checklist for HACCP in a food factory

The HACCP checklist for inspection of food enterprises is developed by the Veterinary Service under the Ministry of Agriculture of the Kyrgyz Republic and approved by a joint order of the Ministry of Economy and Commerce of the Kyrgyz Republic and the Veterinary Service under the Ministry of Agriculture of the Kyrgyz Republic. The form of the Checklist is attached as Annex No. ____.

Checklist for inspection in a food plant for hygiene management based on HACCP principles

Company name		Name of production (branch)	
Main products manufactured		Responsible person	
Address		Email/tele	

	Points to be monitored	Items to be assessed	Points	Assessment
I General points				
1- Responsibilities of the business operator				
1	Preparation of a hygiene management plan	□ The hygiene management plan was fully prepared. □ The plan was partially prepared (1)	2	
		☐ Food handlers are familiar with the prepared plan.	2	
2	How the plan will be implemented (if necessary)	□ Procedures Manual: Shows instructions for the use of equipment and tools in the facility that require daily hygiene, as well as production and handling procedures □ All procedure manuals prepared (4) □ Some are not prepared, but procedures are identified and needed (4) □ Part of the procedures manual prepared (2) □ No procedures manual was prepared (0) □ Properly implemented in accordance with procedure (2)	4	
3	Conducting trainings for food industry workers	□ We provide the necessary training for food workers □ Realized for all target persons (4) □ Implemented for some target persons (2) □ Not realized (0)	4	
		□ Appropriate frequency of training (frequency determined by the site situation)	2	
		□ We regularly review and analyze the impact of training	2	
4	Records and storage of information on hygiene management implementation	□ Documents on the status of hygiene management implementation (2) □ There is documentation of the status of hygiene management implementation, but some deficiencies are present (1)	2	
5	Verification and review of the plan and procedure	□ Review the effectiveness of the hygiene management plan and revise it regularly if necessary (2)	2	

	I General points (Responsibilities of a business operator in food production)	Assessment / 20

II. Questions relating to general aspects of hygiene management (1/2)				
1. Choosing a food hygienist				
6	Choosing a food hygienist	□ A food hygiene manager has been appointed at the company	1	
2. Sanitary facilities				
7	Cleanliness of premises and surrounding area	□ Sanitary facilities and the surrounding area are cleaned regularly	1	
		□ To prevent hazards, the premises are kept clean during operation	1	
8	Unnecessary things	□ No unnecessary items in places of production, processing, storage or sale	1	
9	Cleanliness of interior walls, ceiling and floor in the room	□ Keeping interior walls, ceiling and floor clean	1	
10	Daylighting, lighting and ventilation	□ Adequate daylight, lighting and ventilation	1	
		□ Appropriate temperature and humidity control is properly performed	1	
11	Control of window and door openings	□ Window and door openings are closed (when open, measures are taken to prevent dust, mice, insects, etc.).	1	
12	Drainage system control	□ Cleaning prevents solids and ensures proper drainage	1	
		□ Drainage channels are not damaged, and if damaged, are promptly repaired	1	
13	Toilet cleaning management	□ Regular cleaning and disinfection	1	
3. Hygienic condition of equipment and tools				
14	Cleaning, disinfection and repair of equipment and tools	□ Washed, disinfected, stored on site in a hygienic manner	1	
		□ Quick repair in case of breakage or damage, necessary maintenance so that the equipment can be used properly	1	
15	Periodic inspection of tools, stylizers, etc.	□ Instruments (thermometers, pressure gauges, flow meters, etc.) and equipment (sterilization, water treatment) are checked regularly	1	
		□ Documents on the results of the audit (Exclude if no target tools or equipment are available)	1	
16	Appropriate use and management of chemicals	□ Measures have been taken to handle chemicals such as cleaning and disinfecting agents with care and, where necessary, measures against contamination have been taken, such as labeling of contents	1	
17	Required hand washing equipment	Proper hand washing and drying, using the following: □ Soap is provided	1	
		□ Paper towels, etc. are provided.	1	
		□ Disinfectant (alcohol, etc.) is provided	1	
18	Cleaning tools	□ Cleaning tools are kept clean	1	
	II. Issues related to general hygiene management (1/2) (Facilities and equipment)		Assessment / 20	

II. Issues related to general aspects of hygiene management (2/2)
4. Water resources management

19	Tap water or water suitable for drinking	□ Water used for production, treatment, etc. should be regulated by regulations of state authorities □ When water suitable for drinking is used, water quality is tested at least once a year and the report is kept for one year	1	
20	Regular cleaning of the water storage tank	□ Wash and keep clean on a regular basis (If you do not use a water tank, exclude this item from your scoring results)	1	
21	Periodic inspection of stylizers and water purifier	□ The result is recorded (only when using water suitable for drinking and installing a sterilizer/water purifier)	1	
5. Control measures against mice and insects				
22	Regular survey or control based on investigation	□ Windows, doors, screen doors, traps, drain covers, etc. are installed to prevent intrusion	1	
		□ Rodenticides or pesticides are used with care to prevent ingestion of food	1	
		□ Raw materials, products and packaging materials are stored in containers, away from floors and walls	1	
		□ In order to control mice and insects, extermination is carried out at least twice a year or on the basis of surveys, and records are kept for one year	1	
6. Waste and wastewater management				
23	Waste and wastewater management	□ Waste storage and disposal procedures are defined, as well as the proper disposal of waste and wastewater	1	
		□ Waste containers are kept clean to avoid leaks or odors	1	
24	Waste storage and disposal	□ Waste is not stored in areas where food is handled or stored	1	
7. Ensuring hygiene of food workers				
25	Health status of employees	□ The decision to terminate employment is based on an understanding of the employee's medical condition Symptoms: jaundice, diarrhea, abdominal pain, fever, purulent skin inflammation, discharge from ears, eyes and nose, etc.)	1	
26	Hygienic clothing for employees	□ Wearing clean work clothes as assigned. Wearing a cap and mask as required	1	
27	Hygiene of workers' actions	□ Employees do not wear jewelry, have short fingernails, clean fingers and hands	1	
		□ Thorough hand washing and disinfection after defecation	1	
		□ Thorough hand washing and sanitizing after handling fresh or unheated ingredients	1	
		□ Sputum or saliva in food through sneezing or coughing, or other actions that may cause fever, are not allowed.	1	
		□ Employees do not change their clothes, smoke, eat and drink in designated areas	1	
8. Inspection of food samples				
28	Carrying out inspection of food samples	Food workers who produce 300 servings at a time or 750 or more servings of produce per day (exclude from assessment if this item is not applicable) □ Storage for an appropriate period for raw materials and finished products	1	
29	Information on delivery locations,	□ Documents showing places and times of delivery, quantity of food prepared (if this item is not applicable, exclude it from scoring)	1	

	time, number of units			
9. Recall and disposal				
30	Recall and disposal procedures	□ Implementation of consumer notification methods, collection methods and reporting procedures, and proper utilization	1	
	II. Questions relating to general aspects of hygiene management (2/2) (Other)		Assessment / 20	

III. Issues related to HACCP-based hygiene management (1/2)				
1. hazard analysis				
31	List of hazards and control measures	□ Correct identification of hazards at each stage	3	
		□ Appropriate management measures	3	
		□ Prepare the list of hazards accordingly	2	
2 Identification of critical control points				
32	Decision on determination of critical control points (CCPs)	□ Identify the process by which control measures must be implemented to prevent, eliminate or reduce identified hazards to acceptable levels	2	
3 Determination of the critical limit (CL)				
33	Determining the appropriate Critical Limit (CL) for the KCP	□ It is appropriate to define a critical limit (CL) to prevent, eliminate or reduce the occurrence of hazards to an acceptable level at each important control point	2	
		□ KP is determined using measurable indicators such as temperature, time and water content, and sensory indicators such as appearance	2	
4. defining the monitoring method				
34	Determination of the monitoring method for the KP	□ Appropriately designed and implemented methods to track implementation status, either continuously or at a specified frequency	2	
		□ Preparation of the monitoring document	2	
		□ Documents relevant to monitoring should be confirmed by the person responsible for monitoring and the responsible manager	2	
	III. Issues related to HACCP-based hygiene management (Principle 1-4)		Assessment / 20	

III. Issues related to HACCP-based hygiene management (2/2)				
5. Implementation of corrective actions				
35	Content of improvement measures at the time of deviation from the KP	□ Improvement measures are identified for each important control point and implemented accordingly when monitoring reveals that the level of control is deviating	2	
		□ Preparation of a document on improvement measures	2	
		□ Relevant content of improvement measures	2	
6. Implementation of the verification method				
36	Implementation of a regular verification procedure	【Verification of each HACCP plan】. □ Development and proper implementation of impact verification measures on a regular basis (2) □ Preparation of a document with content (2)	4	
		【Verification of the entire HACCP plan】. □ The business operator has confirmed that the HACCP plan is being implemented as specified (verification of compliance status) (2)	4	

		□ Regular inspections are conducted (in case of changes in raw materials and production methods), hazard analysis and HACCP plan are revised as necessary (2)		
7. Preparation of documents				
37	Documents on monitoring results / improvement measures / verification results (if not established this item can be excluded from the assessment)	□ Records of monitoring results (2) □ Some records are incomplete (1) （The records include the developer, approver, date and time of approval）	2	
		□ Based on the results of review of the above issues, if deviation from the KP is found, the results of the implemented improvement measures are recorded (2) □ Some records are incomplete (1) （ Records contain the developer, approver, date and time of approval）	2	
		□ Verification records available (2) □ Some records are incomplete (1) （The records include the developer, approver, date and time of approval）	2	
IV Other（insert レ if the following conditions are met）				
36	Regular attendance at trainings	□ Food hygiene managers regularly attend practical trainings	-	
39	Storing information about suppliers, product delivery locations, etc.	□ Storage of records of suppliers, production or processing status, delivery or sales locations, etc.	-	
40	Storage of the results of voluntary verification	□ Storage of results of voluntary inspection of produced or processed products	-	
	III. Issues related to HACCP-based hygiene management (Principle 5-7)		Assessment / 20	

【Balls】.

No.	Questions during production inspection	Points	Maximum number of points
1	I. General points (Responsibilities of a business operator in food production)		20
2	II. Issues related to general hygiene management issues (Facilities and equipment)		20
3	II. Issues related to general aspects of hygiene management (Other)		20
4	III. Issues related to HACCP-based hygiene management (Principle 1-4)		20
5	III. Issues related to HACCP-based hygiene management (Principle 5-7)		20
Total			100

【Note】.

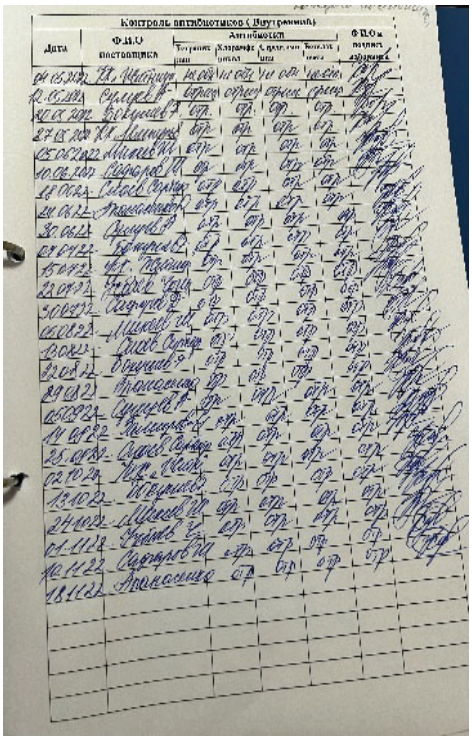
Date of inspection		Organization conducting the inspection	
Name of inspector			

1.4 HACCP record keeping book and documentation in Food Factory

HACCP record keeping book and documentation in Food Factory shall be developed and approved by the factory. Types of record keeping book in Food Factory:

- Decree on establishment of the WG on HACCP at production facilities
  - Decree on HACCP training
  - Production Plan for PRP
  - HACCP Plan
  - CCP recording (monitoring)
  - Record book for measuring equipment
- Checklists for inspection of premises, sanitary facilities
- Employee Health Record Book
  - Record Book on antiobiotics control
  - Record Book control of sanitary rooms, locker rooms, cartperts

Antibiotic Control Check Sheet



Drainage Control Checklist

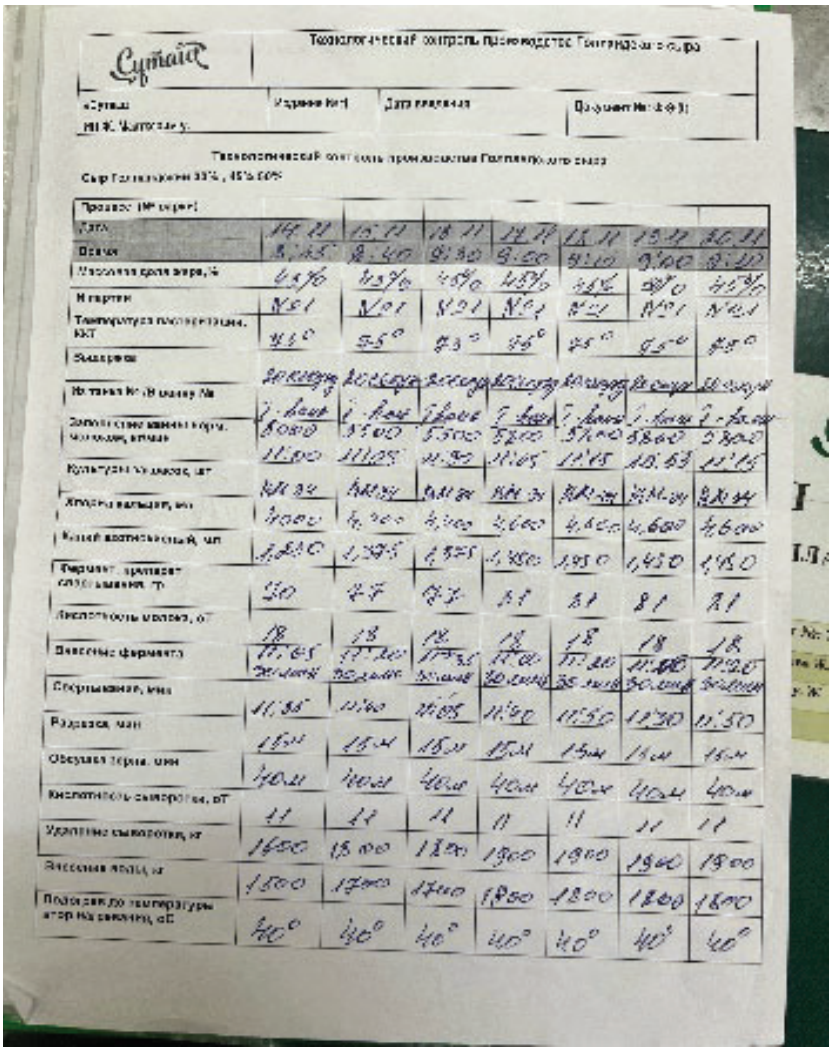
2. Regulations in terms of the (physico-chemical and microbiological laboratory) of the Food Factory Laboratory

-

Research methods for physico-chemical, microbiological analyses *fatness, density, acidity, etc.).*

- Antibiotic testing techniques
- GOSTs
- Equipment instructions
- Certificates of verification of laboratory glassware,
- Measuring equipment, etc.

All regulatory legal acts of the production laboratory in terms of physico-chemical tests, as well as microbiological and other tests, including antibiotics should be studied/trained, filed in a folder and posted at the workplace.



Сулгайт

Технологический контроль производства Голландского сыра

«Сулгайт» | Издание №1 | Дата издания | Документ №: Ф-01

ИП «Чалгасова»

Технологический контроль производства Голландского сыра

Сыр Голландский 30%, 45% ГОСТ

Процесс (№ серии)							
Дата	14.11	15.11	16.11	17.11	18.11	19.11	20.11
Время	8:45	8:40	9:30	9:50	9:40	9:00	8:40
Массовая доля жира, %	45%	45%	45%	45%	45%	45%	45%
№ партии	№1	№1	№1	№1	№1	№1	№1
Температура пастеризации, °С	41°	55°	63°	45°	45°	65°	65°
Закваска							
№ танка № (В силосе №)	2 танк	2 танк	2 танк	2 танк	2 танк	2 танк	2 танк
Заполнение емкости норм. Чел/день, литров	6000	5400	5300	5200	5700	5800	5300
Культура (тип закваски, шт	11:00	11:05	11:00	11:05	12:15	10:55	11:15
Хлорид кальция, мл	200 мл	200 мл	200 мл	200 мл	200 мл	200 мл	200 мл
Расход молочный, кг	4000	4000	4000	4000	4000	4000	4000
Фермент (время свертывания, °)	1840	1795	1925	1950	1950	1930	1950
Кислотность молока, °Т	20	17	17	17	17	17	17
Внесены фермент	11:05	11:20	11:35	11:40	11:20	11:40	11:20
Спустывание, мин	11:35	11:40	11:55	11:50	11:50	11:30	11:50
Разрезка, мин	15м	15м	15м	15м	15м	15м	15м
Обсушка (время, мин	40м	40м	40м	40м	40м	40м	40м
Кислотность сыворотки, °Т	11	11	11	11	11	11	11
Удаление сыворотки, кг	1600	1500	1200	1900	1900	1940	1900
Внесена вода, кг	1600	1700	1700	1850	1800	1800	1800
Подогрев до температуры второго нагревания, °С	40°	40°	40°	40°	40°	40°	40°

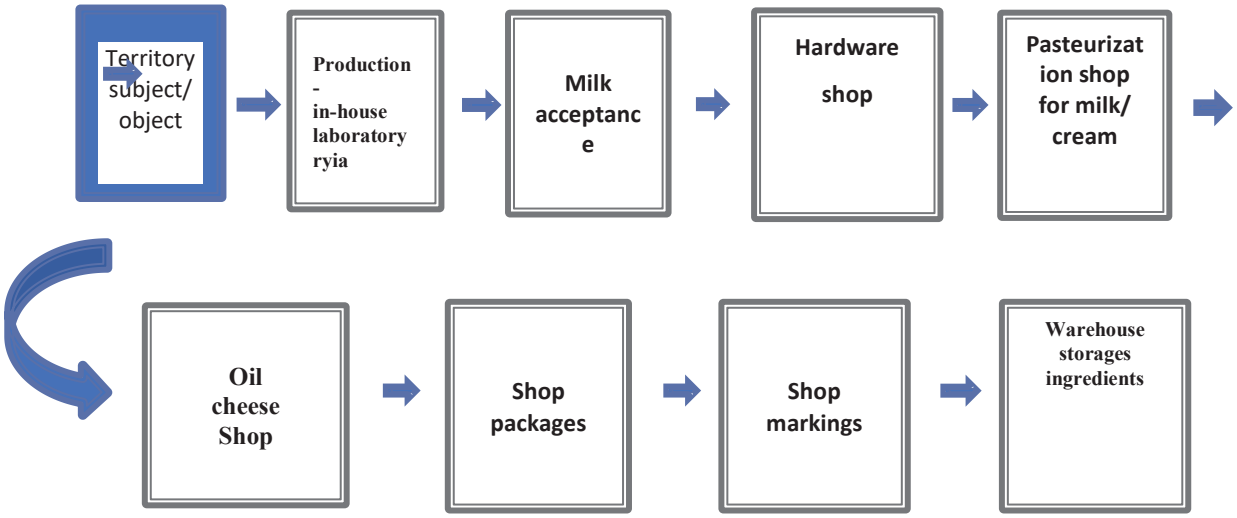
3. Veterinary and sanitary requirements and norms of the EEU (TRs and Decisions)

3.1. TR TS 021/2011 "On Food Safety"

- *Clause 2, Article 10, Chapter 3, Clause 2 "When carrying out the processes of production (manufacturing) of food products, the manufacturer shall develop, implement and maintain procedures related to the HACCP principles".*
- *p.3 the following procedures to ensure food safety:*

1) Selection of technological processes for production (manufacturing) of food products
2) Selection of sequence and flow of technological operations of production (manufacturing) of food products in order to exclude contamination of raw materials and food products
3) Determination of controlled stages of technological operations and food products at the stages of their production (manufacturing) in the CCPs
4) Carrying out control over raw materials, technological means, packaging materials, articles and food products means ensuring the necessary reliability and completeness of control
5) Control over the functioning of technological equipment
6) Ensuring documentation of controlled stages of technological operations and control results
7) Compliance with storage and transportation (shipping) conditions
8) Maintenance of production facilities, technological equipment and inventory in a condition that prevents contamination of food products
9) Observance of personal hygiene rules
10) Selection of methods, establishment of periodicity and performance of cleaning, washing. Disinfection, disinsection and deratization of production facilities, technological equipment and inventory
11) Maintenance and storage of paper/electronic records
12) Traceability of food products

Article 14. Requirements to the organization of production premises where the process of production (manufacturing) of food products is carried out



1. The layout of production facilities, their design, placement and size shall ensure:

1) possibility to implement the flow of technological operations excluding counter or cross flows of food (edible) raw materials and food products, contaminated and clean inventory;

2) prevention or minimization of air pollution used in the process of production (manufacturing) of food products;

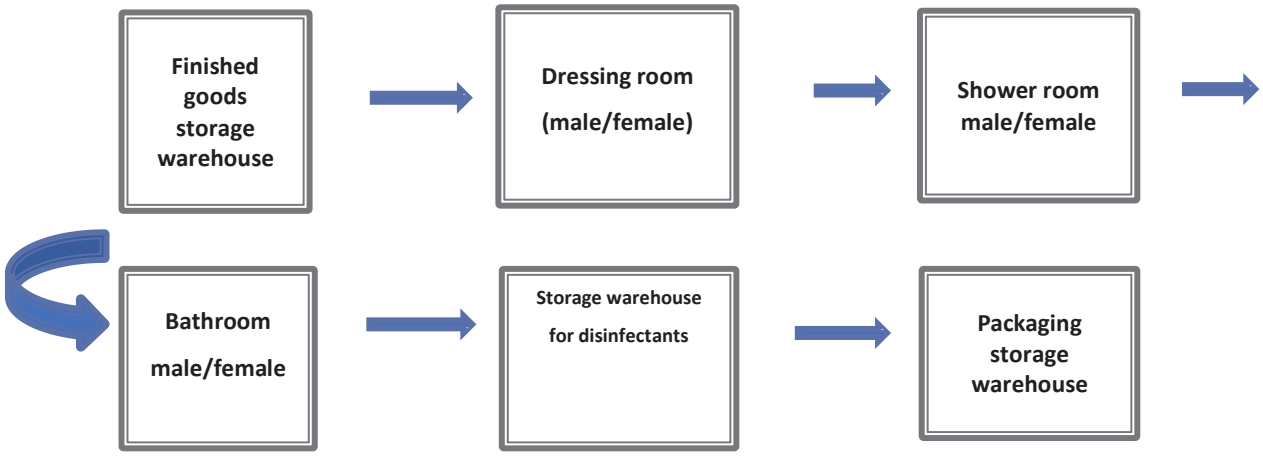
3) protection against penetration of animals, including rodents, and insects into production facilities;

4) possibility to perform necessary maintenance and current repair of technological equipment, cleaning, washing, disinfection, disinsection and deratization of production facilities;

5) the necessary space for the implementation of technological operations;

6) protection against dirt accumulation, particles falling into the produced food products, condensation, mold formation on the surfaces of production facilities;

7) conditions for storage of food (edible) raw materials, packaging materials and food products.



2. Production premises where the production (manufacturing) of food products is carried out shall be equipped:

1) means of natural and mechanical ventilation, the quantity and (or) capacity, construction and design of which allow to avoid contamination of food products, as well as provide access to filters and other parts of the said systems that require cleaning or replacement;
2) natural or artificial illumination complying with the requirements established by the legislation of the Customs Union member state;
3) toilets, the doors of which shall not face the production facilities and shall be equipped with hangers for working clothes before entering the vestibule, equipped with washbasins with hand washing facilities;
4) hand washing sinks with hot and cold water supply, hand washing facilities and devices for wiping and (or) drying hands.

3. Personal and industrial (special) clothing and footwear of the personnel shall not be stored in the production premises.

4. Any substances and materials not used in production (manufacturing) of food products, including detergents and disinfectants, shall not be stored in the production premises, except for detergents and disinfectants required to ensure current washing and disinfection of production premises and equipment.

5. Parts of production premises where production (manufacturing) is carried out
food products shall comply with the following requirements:
1) floor surfaces shall be made of waterproof, washable and non-toxic materials, be accessible for washing and, if necessary, disinfection, and proper drainage;
2) wall surfaces shall be made of waterproof, washable and non-toxic materials that can be washed and, if necessary, disinfected;
(3) ceilings or, in the absence of ceilings, interior roof surfaces and structures above production areas shall prevent the accumulation of dirt, mold, and particles from settling on ceilings or such surfaces and structures and shall help reduce condensation;
4) opening exterior windows (transom windows) must be equipped with insect screens that can be easily removed for cleaning;
5) doors of production facilities should be smooth, made of non-absorbent materials.

6. Doors shall be opened outward from the production premises, unless otherwise stipulated by fire requirements.

7. Sewage equipment in production facilities must be designed and executed in such a way as to eliminate the risk of contamination of food products.

8. It is prohibited to repair production facilities simultaneously with production (manufacturing) of food products in such production facilities.

3.2. TR EAEU 033/2013 "On the safety of milk and dairy products"

Article 11. Requirements for ensuring safety of food products in the process of their production (manufacturing)

1. The manufacturer of food products shall be obliged to implement safety procedures in the process of production (manufacturing) of such food products.
2. Organization of ensuring safety in the process of production (manufacturing) of food products and control shall be carried out by the manufacturer independently and (or) with participation of a third party.
3. the manufacturer shall determine:
1) list of dangerous factors that may lead in the process of production (manufacturing) to the release into circulation of food products that do not comply with the requirements of these technical regulations and 22 (or) technical regulations of the Customs Union on certain types of food products;

2) a list of critical control points of the production (manufacturing) process - parameters of technological operations of the food product production (manufacturing) process (its part); parameters (indicators) of safety of food (edible) raw materials and packaging materials for which control is required to prevent or eliminate the hazardous factors specified in clause 1 of this part;
3) limit values of parameters controlled at critical control points;
4) procedure for monitoring critical control points of the production (manufacturing) process;
5) establishment of the procedure for actions in case of deviation of values of indicators specified in paragraph 3 of this part from the established limit values;
6) frequency of inspection for compliance of the food products released into circulation with the requirements of these technical regulations and/or technical regulations of the Customs Union on certain types of food products;
7) periodicity of cleaning, washing, disinfection, deratization and disinsection of production premises, cleaning, washing and disinfection of technological equipment and inventory used in the process of production (manufacturing) of food products;
8) measures to prevent rodents, insects, synanthropic birds and animals from entering production facilities.

4. The manufacturer shall be obliged to keep and store documentation on the implementation of safety measures in the process of production (manufacturing) of the food products, including documents confirming the safety of unprocessed food (edible) raw materials of animal origin, on paper and/or electronic data carriers. Documents confirming safety of non-processed food (edible) raw materials of animal origin shall be subject to storage within three years from the date of their issuance.

5. It is forbidden to eat directly in the production premises.

6. Employees engaged in work associated with the production (manufacturing) of food products and during the performance of which there is direct contact of employees with food (edible) raw materials and/or food products shall undergo mandatory preliminary medical examinations upon entering employment and periodic medical examinations in accordance with the laws of the Customs Union member state.

7. Patients with infectious diseases, persons suspected of such diseases, persons who have been in contact with patients with infectious diseases, persons who are carriers of pathogens of infectious diseases shall not be allowed to work related to production (manufacturing) of food products.

Article VII. Safety requirements for dairy products

32. Levels of toxic elements, potentially hazardous substances, **mycotoxins, antibiotics, pesticides, radionuclides, microorganisms and values of oxidative spoilage indicators shall not exceed levels** in dairy products intended for release into circulation in the customs territory of the Customs Union, including organic, physico-chemical and microbiological indicators.

34. Production of dietary foods and fermented milk products (except for dairy compound products) must be carried out without the use of food additives and flavorings, except for functionally necessary components. The production of cottage cheese mass and cottage cheese grains must be carried out without heat treatment of the finished product and the addition of consistency stabilizers and preservatives.

Article IX. Requirements for ensuring the safety of milk and dairy products in the process of their production, storage, transportation, sale and utilization

44. Materials in contact with milk and dairy products during the production process must comply with the requirements for the safety of food contact materials. Traceability of milk and dairy products shall be ensured at all stages of the production process.

45. Production facilities at which processes are carried out for the production of raw milk, raw skimmed milk, raw cream and (or) their processing (treatment) in the production of dairy products are subject to state registration.

46. The organization of production premises where milk and dairy products production process is carried out, technological equipment and inventory, including baby food products, used in the process of milk and dairy products production, conditions for storage and disposal of milk and dairy products production waste, as well as water used in the process of milk and dairy products production shall comply with the requirements of the Technical Regulations of the Customs Union "On the Safety of Food Products" (TR TS TS 021/2011).

3.3. TR TS TS 005/2011 "On the safety of packaging"

Art.14. TR TS 021/2011 "On Food Product Safety" **Requirements for organization of production facilities where the process of production (manufacturing) of food products is carried out**

The layout of production facilities, their design, placement and size shall ensure:
7) conditions for storage of food (edible) raw materials, packaging materials and food products:

3.4. TR TS 022/2011 "Food products in terms of their labeling"

At the same time, the dairy production enterprise or the enterprise involved in its circulation shall ensure that it is possible to identify any supplier of raw materials and the origin of any component included in the products, as well as all recipients of the products of this enterprise.

Businesses involved in the circulation of products should have systems and procedures in place to make this information available to competent authorities upon request.

Food products placed or prepared for placement on the market shall be labeled or identified in a manner that facilitates traceability through documentation, or shall contain information consistent with food-specific requirements.

IX. Risk analysis and critical control points (HACCP)

HACCP or HACCP-like systems in dairy production are a means of managing the production process to ensure food safety.
The approval of a HACCP plan or a plan of a HACCP-like system for the production of dairy products should ensure that the plan meets the objectives or criteria for ensuring the production of veterinary-sanitary safe products, taking into account the degree of variability in the presence of hazards and risks that is usually associated with the different health status of the animals whose raw materials are supplied for processing.
The frequency of inspections under a HACCP plan or similar HACCP system may vary depending on the operational aspects of production control as well as the immediate results of previous inspections.
The competent authority may personally approve plans for HACCP or a similar HACCP system and set the frequency of inspections.
Microbiological testing for the purpose of HACCP or HACCP-like system verification (e.g., for critical limit testing and statistical production control) for many food products is a critical characteristic of the effectiveness of HACCP or HACCP-like plans.

X. Standard Operating Procedures for Sanitary Control (SOPSC)

Operational and pre-operational Standard Operating Procedures for Sanitary Control (SOPSC) are designed to minimize direct and indirect contamination of milk.
A properly implemented FPIC system should ensure that all tools and equipment are cleaned and sanitized before work begins and that appropriate hygiene requirements are met during production.
The competent authority may provide guidance on the SRPSC that includes the minimum mandatory requirements for general sanitary control.
Features of standard operating procedures for sanitary control (SOPSC):
The institution's development of a written SRCCC program describing the procedures involved and establishing the frequency of their use;

appointment of persons responsible for the implementation and control of the SPSS by order of the company's personnel;
Documentation of monitoring and any corrective and/or preventive actions taken, access to which is provided to the competent authority for verification purposes;
corrective actions that include appropriate product placement;
Periodic evaluation of the effectiveness of the system by the head of the institution.
In sanitary inspection of the production area where finished products intended for human food are handled, tests for microbiological cleanliness of food-contact and non-food-contact surfaces under the SRFSC should be of a higher intensity than otherwise and for other types of products.

Storage areas for milk and milk products must be kept clean and in good repair.

Product storage rooms shall:

-allow for efficient maintenance, cleaning and disinfection, prevent or minimize air pollution and provide adequate workspace for sanitation and hygiene work;

-prevent accumulation of dirt, contact of raw materials and products with toxic materials, crumbling of particles from the ceiling, formation of condensation or unwanted mold (mold that is not intended by the process) on surfaces;

-ensure proper hygiene, including protecting the premises from contaminants, rodents and insects;

- if necessary, ensure adequate thermoregulation conditions during product handling and storage, with temperature control systems providing continuous temperature monitoring and, if necessary, recording;
to have conditions for personnel changing clothes and, if necessary, for their sanitary and shower treatment before entering the production facilities.

3.4. Decision of the Customs Union Commission of June 18, 2010 N 317

is taken into account when drawing up and issuing a Form No. 2a vet certificate from farm to production or from farm to milk collection point and to production:

1. When importing into the customs territory of the Customs Union and (or) moving between the Parties milk obtained from cattle and small ruminants and dairy products, animal health, the welfare of the territory and, respectively, raw materials of animal origin must be free:
   - **enzootic leukosis within** the last 12 months on the farm;
   - **brucellosis of** cattle,
   - **tuberculosis** - within the last 6 months in the farm;
   - **no mastitis;**

2. Heaating, to kill pathogenic microorganisms that pose a risk to human health;

3. subjected to a recycling process, guaranteeing the absence of viable pathogenic flora;

4. recognized as fit for food/processing/sale without restriction;

5. microbiological, physico-chemical, chemical-toxicological and radiological indicators of milk and milk products comply with veterinary and sanitary rules and requirements;

6. milk and milk products with altered organoleptic parameters or package integrity violations are not allowed.

4. Prerequisites Program (PRP)

These are general control measures used in all areas of the food industry to maintain a safe and hygienic environment. General sanitation of the production hall, equipment at the end of the work shift (which is a PPU) They do not control specific hazards or steps in the production process.

The organization shall develop, implement, maintain and update Preconditioning Programs (PPPs/PRPs) aimed at preventing and/or reducing contaminants (including food hazards) in products, in production processes and in the production environment.

PRP's should:

(a) Meet the food safety needs of the organization;

b) appropriate to the size and type of production and the nature of the products being manufactured and/or processed;

c) be implemented throughout the production system either as programs applicable generally or as programs applicable to a specific product or production line;

d) be approved (authorized) by the food safety team.
The organization shall identify the statutory and regulatory requirements relevant to the above

When selecting and/or developing the FPU, the organization should consider and use relevant information (e.g. legislative and regulatory requirements, consumer requirements, recognized *Codex Alimentarius Commission* guidelines, principles and codes of practice, national, international or industry standards).

The requirements for mandatory pre-event programs are embedded in:

- Regulation (EC) of the European Parliament and of the Council No. 852/2004; No. 853/2004 of April 29, 2004.
- Codex Alimentarius (Food Hygiene. Basic texts);
- ISO/TS 22002-1:2009 Food safety prerequisite programs. Part 1. Manufacture of food products.

The content of PPU programs depends on the type of company's activity and is determined by one of the ISO/TS 22002 standards

ISO/TS 22002-1:2009 Manufacture of food products
ISO/TS 22002-1:2013 Public catering
ISO/TS 22002-3:2011 Agricultural production
ISO/TS 22002-4:2013 Manufacture of food packaging
ISO/TS 22002-6:2016 Animal feed production

Examples:

- control of raw materials and suppliers;
- cleaning and sanitation of the production area, equipment;
- personal hygiene of staff;
- employee training;
- pest control.
- proper planning of production, support and welfare facilities;
- requirements to the condition of premises, equipment, repair work, equipment maintenance, calibration, as well as measures to protect food products from contamination and foreign impurities;
- requirements for planning and condition of utilities - ventilation, water supply, electricity and gas supply, lighting, etc;
- safety of water, ice, steam, food processing aids, food contact items and materials;
- cleanliness of surfaces (cleaning procedures, washing and disinfection of production, auxiliary and domestic premises and other surfaces);
- Good industrial practice in terms of maintaining satisfactory health, behavior and hygiene of personnel;

- protection of products from foreign inclusions; handling, collection and disposal of production waste and garbage;
- pest control, identification of pest species, prevention of their occurrence, means of prevention and control;
- storage and use of disinfectant-toxic compounds and substances;
- procurement management, in particular the selection and evaluation of suppliers, as well as input control of raw materials to eliminate the risk of supplying non-conforming raw materials for further production of finished products;
- storage and transportation of products;
- process control;
- Food labeling and consumer awareness

After the identification phase of the FPU, it is necessary to record the procedures for its management. The same requirement is set out in the ISO 22000 standard. In doing so, aspects such as:

- How a particular FPU helps ensure the production of a safe product;
- Who is charged with overseeing compliance with the PPU;
- what corrective actions are required in case of non-conformities;
- How documentation of a particular PPU is maintained.

4.1 Traceability and raw material control (EEU Decision No. 94 of October 9, 2014)

The traceability of dairy products intended for human food should be ensured at all stages of production and circulation of these products.

At the same time, the dairy production enterprise or the enterprise involved in its circulation shall ensure that it is possible to identify any supplier of raw materials and the origin of any component included in the products, as well as all recipients of the products of this enterprise.

Businesses involved in the circulation of products should have systems and procedures in place to make this information available to competent authorities upon request.

Food products placed or prepared for placement on the market must be labeled or identified in a manner that facilitates traceability through documentation, or must contain information consistent with food-specific requirements.

III. General Hygiene Regulations for Enterprises (EEU Decision No. 94)

All milk collection and handling operations should be done in a manner that minimizes the possibility of contamination of the products with any contaminants.

The following requirements are necessary to implement proper sanitary process preparation:

1) the floor surface must be kept clean, easy to clean and disinfect. Therefore, waterproof, non-absorbent, washable and non-toxic materials should be used for flooring. Drainage drains should be present in the floor where necessary. At the end of each working day (or shift), the floor surface should be mopped;

2) the wall surface must be kept clean, easy to clean and disinfect. In this regard, waterproof, non-absorbent, washable and non-toxic materials should be used for wall cladding. The wall surface must be smooth;

3) other surfaces (including equipment surfaces) in areas where food products are processed, in particular surfaces that come into direct contact with food products must be kept clean, easy to clean and disinfected. For this purpose, smooth, washable, corrosion-resistant and non-toxic materials must be used. All surfaces must be washed at the end of each working day (or shift);

4) the building shall have properly sized, properly located, covered and vented drains for the disposal of industrial liquid wastes. The floor surface in all rooms shall be sloped to the drainage drains;

5) the ceiling (in its absence, the interior surface of the roof) and overhead fasteners shall be arranged to prevent dirt accumulation, reduce the potential for condensation, unwanted mold growth (mold that is not anticipated by the process), and particle shedding;

6) windows and other openings shall be arranged in such a way as to prevent the accumulation of dirt. Windows which open to the street shall be fitted with mosquito nets easily removable for cleaning. Windows through which contaminants may enter the room shall remain closed during production;

7) doors must be easy to clean and disinfect. Smooth and non-absorbent materials should be used for this purpose. Wooden doors and doorways should be covered with metal with tightly soldered joints;

8) Water supply: regardless of the water source used (boreholes, wells, streams, municipal water supply, etc.), water must meet drinking water requirements. Cold and hot water should be supplied in sufficient quantities to all production areas.

VI. Water supply (EEU Decision No. 94)

The water supply of the enterprise, including the provision of drinking water, shall be permanent and shall be organized in such a way as to guarantee the exclusion of contamination of food products.

Non-potable water (service water) used e.g. for fire-fighting, steam production, cooling and other similar purposes must be circulated in a separate water supply system. Non-potable water (service water) must not be mixed with drinking water or seep into the drinking water supply system.
Water used in the processing of raw materials or products or as an essential component in the manufacture of products shall not introduce a risk of product contamination. It shall comply with the drinking water standard unless the competent authority considers that its quality cannot affect the sanitary condition of the foodstuffs.
Ice that comes into contact with or may contaminate food products must be made from drinking water. Ice must be made, processed and stored in conditions that exclude its contamination.
Steam in direct contact with food products must not contain substances that pose a threat to human health or may contaminate food products.
If heat treatment of raw materials or products in hermetically sealed containers is used, ensure that the water used to cool the containers after heat treatment is not a source of food contamination.

VII. Personal hygiene (EEU Decision No. 94)

Personal hygiene is necessary to prevent general and cross-contamination of food products with pathogens that can cause foodborne illness in humans.
Every food handler shall observe an appropriate degree of personal hygiene and wear appropriate clean and, where necessary, protective clothing. Any employee who becomes ill shall immediately report his/her illness or signs of illness to his/her supervisor.
The list of illnesses and symptoms that should be reported to a supervisor for consideration of the need for a physical examination and/or possible removal from food handling (processing) includes jaundice, diarrhea (diarrhea), vomiting, fever (fever), sore throat, fever (chills), obvious skin lesions (boils, cuts, etc.), unnatural discharge from the ears, eyes, or nose.
Personnel handling milk directly should also observe an appropriate degree of personal hygiene and, where necessary, wear appropriate protective clothing, headgear and footwear. Cuts and wounds for which personnel are allowed to continue working should be dressed with an appropriate waterproof dressing.
Staff are required to wash their hands in any instance where personal hygiene may affect food safety, e.g.:
at the beginning of work on food processing (handling);
right after going to the bathroom;
after handling raw food or any other contaminated material. This may lead to contamination of other products, so workers in this category should avoid contact with finished products.
Food handlers should refrain from smoking, spitting, chewing or eating, sneezing or coughing near unprotected food during working hours.
Jewelry, watches, pins or any other such items should not be worn or brought into food processing areas.

V. Storage facilities for milk and dairy products (EEU Decision No. 94)

Storage areas for milk and milk products must be kept clean and in good repair.
Product storage rooms shall:
-allow for efficient maintenance, cleaning and disinfection, prevent or minimize air pollution and provide adequate workspace for sanitation and hygiene work;
-prevent accumulation of dirt, contact of raw materials and products with toxic materials, -pollution of particles from the ceiling, formation of condensation or unwanted mold (mold that is not intended by the process) on surfaces;
-ensure proper hygiene, including protecting the premises from contaminants, rodents and insects;
- if necessary, ensure adequate thermoregulation conditions during product handling and storage, with temperature control systems providing continuous temperature monitoring and, if necessary, recording;
-have conditions for personnel changing clothes and, if necessary, for their sanitary and shower treatment before entering the production facilities.
Businesses must maintain cleanliness:
-Milk and dairy product storage areas
-Facility requirements, storage areas, temperature monitoring, toilets, washbasins, lighting, drainage,

dirty clothes tank, equipment, water supply, personal hygiene of staff, training (HACCP), rodent control
-Principles of primary milk processing
-Organization of production at the enterprise
-Organization of safety measures during processing (recycling) and after
-Microbiological and other indicators of the suitability of raw materials
-Microbiological safety measures
-Pasteurization of milk and liquid dairy products

TP TC 021/2011 "On Food Products Safety"

1. Food (edible) raw materials used in production (manufacturing) of food products shall comply with the requirements established by these technical regulations and/or technical regulations of the Customs Union on certain types of food products and be traceable.

3. When receiving unprocessed food (edible) raw materials from productive animals that have been exposed to veterinary medicines (natural and synthetic estrogenic, hormonal substances, thyreostatic drugs (animal growth stimulators), antimicrobial and other veterinary medicines), the periods of excretion of such drugs from the animal organism established by instructions for the use of veterinary medicines must be observed (taking into account the longest possible period of time).

4 Storage of food (edible) raw materials and components used in production (manufacturing) of food products shall be carried out under conditions ensuring prevention of spoilage and protection of these raw materials and these components from contaminants.

5. Food products in circulation, including food (edible) raw materials, must be accompanied by shipping documentation ensuring traceability of these products

Control of raw materials

Senior management should ensure that the food safety policy:

(a) Consistent with the organization's role in the food chain;

(b) complies with the legal requirements established by the state administration authorities as well as mutually agreed consumer requirements concerning food safety;

(c) Communicated to staff, implemented and maintained at all levels of the organization;

(d) Analyzed to determine its continuing suitability;

(e) Adequate with respect to information sharing;

(f) Supported by measurable objectives

Security policy: The overall intent and direction of an organization's security ***policy*** formally articulated by the person or group of people with the highest level of management of the organization.

NOTES.

Typically, the security policy is consistent with the overall policy of the organization and provides a framework for setting security objectives

EEC Decision No. 94 point IY. Premises for storing milk and dairy products shall:

-allow for efficient maintenance, cleaning and disinfection, prevent or minimize air pollution and provide adequate workspace for sanitation and hygiene work;

-prevent accumulation of dirt, contact of raw materials and products with toxic materials, crumbling of particles from the ceiling, formation of condensation or unwanted mold (mold that is not intended by the process) on surfaces;

-ensure proper hygiene, including protecting the premises from contaminants, rodents and insects;

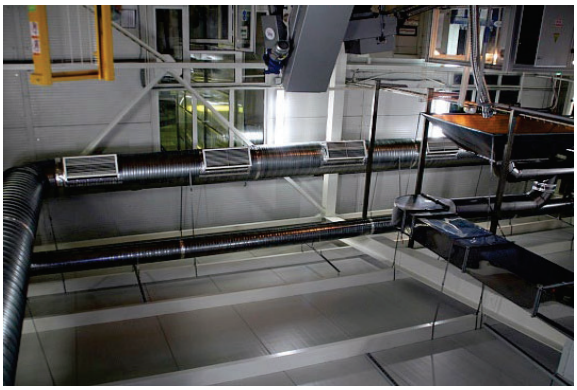
- if necessary, ensure adequate thermoregulation conditions during product handling and storage, with temperature control systems providing continuous temperature monitoring and, if necessary, recording;
Have facilities for staff to change clothes.


Toilets
-must be in sufficient quantity and connected to the sewage system. They must not be located in the immediate vicinity of the premises where dairy products are handled (processed).
-a proper natural or mechanical ventilation system must be present.
Item 13 Management of toilet cleaning

1 3	Toilet cleaning management	□ Regular cleaning and disinfection (sink, toilet, ceiling, walls, litter box, floor) -deskovriki	EEU Decision No. 94, Annex No. 3 Section B Chapter IY TP TC 021/2011 Ch.3 Art.14

Washbasins
-there should be sufficient numbers of properly located and labeled handwashing basins.
-should be provided with hot and cold water, should be equipped with means for washing and hygienic drying (wiping) of hands.
-should staff restrooms, locker rooms, and work areas.
-designed so that hands up to the elbow are not required to turn the water on and off.
-for washing products, wash basins are located separately from the hand washing basins.


Ventilation
-provided with proper means of natural or artificial ventilation, excluding air ingress from the contaminated (raw material) zone (environment) into the clean zone (production and storage area).
-designed so that filters and other parts requiring regular cleaning or replacement can be removed at any time.

Lighting
-should have an intensity that allows the plant personnel and the technical control service to assess the sanitary conditions of the plant and the presence of product contamination.

10	Daylighting, lighting and ventilation	□ Adequate daylight, lighting and ventilation	EEU Decision No. 94, Annex No. 3 Section B Chapter III, IY TP TC 021/2011 Ch.3 Art.11, Art.14
		□ Appropriate temperature and humidity control is properly performed: -once, twice, three times a day; -there's a checklist; -registration is not in progress	

Drainage
-Drainage devices must perform their functions properly. They must be designed and constructed to minimize the risk of product contamination.
In areas where drainage channels are fully or partially open, they must be designed in such a way that the waste water is guaranteed not to flow from a contaminated area into a clean area, in particular into a clean area where foodstuffs presenting a high risk to the end user are handled (processed).


12	Drainage system control	□ Cleaning of drains, prevents solids and ensures proper washing, disinfection -shop no. -shop no. -shop no. -shop no. -shop no.	EEU Decision No. 94, Annex No. 3 Section B Chapter IY

		□ Drainage channels are not damaged, and if damaged, are promptly repaired -there's a journal	

Locker rooms
-located separately from rooms where food is prepared, stored or handled (processed).
-are separate from the restrooms.
-Separate locker rooms for men and women, if the company employs both.
-there must be sufficient and properly distributed lighting.
-the presence of separate changing rooms for those working in the "dirty" and "clean" zones.
The soiled clothing receptacle shall be adjacent to the service locker rooms.

4.2 Control of hygiene of equipment and device (point Y. EEU Decision No. 94)

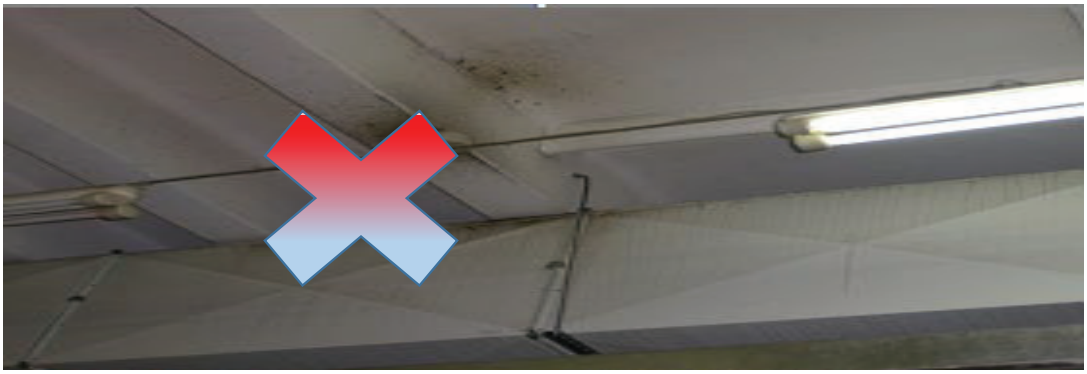
All parts, tools and equipment with which food comes into direct contact must:
- be thoroughly cleaned and, if necessary, disinfected. Equipment must be cleaned and disinfected at regular intervals to eliminate any risk of product contamination;
- be so constructed, of such materials and maintained through regular repairs in such a condition as to minimize any risk of contamination;
- except for non-returnable containers and packages, be so constructed, of such materials, and maintained by regular repairs in such condition that they remain clean and disinfected only as necessary;
- be installed in such a way as to allow proper cleaning of the equipment and surrounding area.

If necessary, the equipment should be equipped with appropriate monitoring devices. If chemicals are required to prevent corrosion of equipment and containers, they must be used in accordance with appropriate safety procedures.

All milk collection and handling operations should be done in a manner that minimizes the possibility of contamination of the products with any contaminants.
The following requirements are necessary to implement proper sanitary process preparation:
1) the floor surface must be kept clean, easy to clean and disinfect. Therefore, waterproof, non-absorbent, washable and non-toxic materials must be used for flooring. Drainage drains should be present in the floor where necessary. At the end of each working day (or shift), the floor surface should be mopped;
2) the wall surface should be smooth and kept clean, easy to clean and disinfect. Therefore, waterproof, non-absorbent, washable and non-toxic materials should be used for wall cladding.
3) other surfaces (including equipment surfaces) in areas where food products are processed, in particular surfaces that come into direct contact with food products must be kept clean, easy to clean and disinfected.

For this purpose, smooth, washable, corrosion-resistant and non-toxic materials must be used. All surfaces must be washed at the end of each working day (or shift);
4) the building shall have properly sized, properly located, covered and vented **drains for the disposal of** industrial liquid waste. The floor surface in all rooms shall be sloped to the drainage drains;

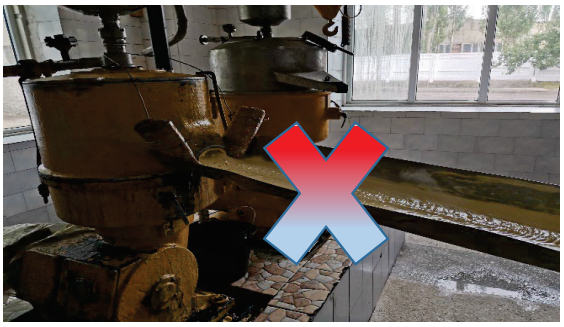
5) the **ceiling** (in its absence, the interior surface of the roof) and overhead fasteners shall be arranged to prevent dirt accumulation, reduce the potential for condensation, unwanted mold growth (mold that is not anticipated by the process), and particle shedding;



6) windows and other openings shall be arranged in such a way as to prevent the accumulation of dirt. Windows which open to the street shall be fitted with mosquito nets easily removable for cleaning. Windows through which contaminants may enter the room shall remain closed during production;

7) doors must be easy to clean and disinfect. Smooth and non-absorbent materials should be used for this purpose. Wooden doors and doorways should be covered with metal with tightly soldered joints;

8) Water supply: regardless of the water source used (boreholes, wells, streams, municipal water supply, etc.) water must meet drinking water requirements. Cold and hot water should be supplied in sufficient quantities to all production areas.



Equipment:

All parts, tools and equipment with which food comes into direct contact must:

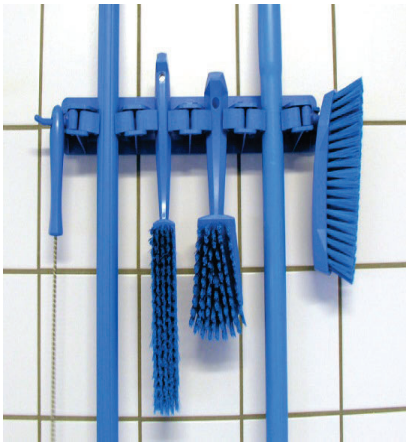
-be thoroughly cleaned and, if necessary, disinfected. Equipment must be cleaned and disinfected at regular intervals to eliminate any risk of product contamination;

-be so constructed, of such materials and maintained through regular repairs in such a condition as to minimize any risk of contamination;

-except for non-returnable containers and packages, be so constructed, of such materials, and maintained through regular repairs in such condition that they remain clean and sanitized only as necessary;

-be installed in such a way as to allow proper cleaning of the equipment and the surrounding area.

If necessary, the equipment should be equipped with appropriate monitoring devices. If chemicals are required to prevent corrosion of equipment and containers, they must be used in accordance with appropriate safety procedures.



9	Cleanliness of interior walls, ceiling and floor in the room	□ Keeping interior walls, ceiling and floor clean -sunday (once a week, once every 10 days) -general cleaning (once a month, once a quarter)	EEU Decision No. 94, Annex No. 3 Section B Chapter III, IY TP TC 021/2011 Ch.3 Art.11, Art.14
11	Control of window and door openings	□ Window and door openings are closed (when open, measures are taken to prevent dust, mice, insects, etc.): -there are nets on the windows -applied Velcro insect repellent, taking into account the term on its application; -installed air conditioning	EEU Decision No. 94, Annex No. 3 Section B Chapter III, IY TP TC 021/2011 Ch.3 Art.11, Art.14

14	Cleaning, disinfection and repair of equipment and tools	□ Washed, disinfected, stored on site in hygienic conditions - the designated tool box is labeled	EEU Decision No. 94, Annex No. 3 Section B Chapter Y TP TC 021/2011 Ch.3 Art.11 p.7, Art.14
		□ Quick repair in case of breakage or damage, necessary maintenance so that the equipment can be used properly -there is an equipment repair log	

4.3 Control of personnel hygiene (Personal hygiene) point YII. EEU Decision No. 94

Personal hygiene is necessary to prevent general and cross-contamination of food products with pathogens that can cause foodborne illness in humans.
Every food handler shall observe an appropriate degree of personal hygiene and wear appropriate clean and, where necessary, protective clothing. Any employee who becomes ill shall immediately report his/her illness or signs of illness to his/her supervisor.
The list of illnesses and symptoms that should be reported to a supervisor for consideration of the need for a physical examination and/or possible removal from food handling (processing) includes jaundice, diarrhea (diarrhea), vomiting, fever (fever), sore throat, fever (chills), obvious skin lesions (boils, cuts, etc.), unnatural discharge from the ears, eyes, or nose.

Personnel handling milk directly should also observe an appropriate degree of personal hygiene and, where necessary, wear appropriate protective clothing, headgear and footwear. Cuts and wounds for which personnel are allowed to continue working should be dressed with an appropriate waterproof dressing.
Staff are required to wash their hands whenever personal hygiene may affect food safety:
- at the beginning of work on food processing (handling);
- right after going to the bathroom;
- after handling raw food or any other contaminated material.

Food handlers should refrain from smoking, spitting, chewing or eating, sneezing or coughing near unprotected food during working hours.
Jewelry, watches, pins or any other such items should not be worn or brought into food processing areas.

7. **Ensuring hygiene** of **food workers**				
25	Health status of employees	□ The decision to terminate employment is based on an understanding of the employee's medical condition Symptoms: jaundice, diarrhea, abdominal pain, fever, purulent skin inflammation, discharge from ears, eyes and nose, etc.)		
26	Hygienic clothing for employees	□ Wearing clean work clothes as assigned. Wearing a cap and mask as required		

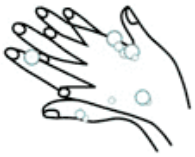
27	Hygiene of workers' actions	□ Employees do not wear jewelry, have short fingernails, clean fingers and hands		
		□ Thorough hand washing and disinfection after defecation		
		□ Thorough hand washing and sanitizing after handling fresh or unheated ingredients		
		□ Sputum or saliva in food through sneezing or coughing, or other actions that may cause fever, are not allowed.		
		□ Employees do not change clothes, smoke, eat and drink in designated areas		

Hand washing rule

Wet your hands and forearm in the sink to wash your hands.

With a single squeeze of the dispenser, apply a portion of soap to your hand and rub your hands together to achieve a lather.

Soap your hands up to your forearms, rub on the inside of your palms and between your crossed fingers.



Then down the back of your hands and between your fingers.

Interlock the fingers of your hands and make several rotational movements.

Wrap your thumbs around each thumb alternately and make a few rotational movements with your hand.

Rub your fingertips against the opposite palm.

Rinse hands and forearms with warm running water. The water should run down your forearms to your fingertips.

Tear off 1-2 paper towels. Use them to dry your hands. Close the faucet with a paper towel.
Treat your hands with a hand sanitizer.

Food handlers should refrain from smoking, spitting, chewing or eating, sneezing or coughing near unprotected food during working hours.

No jewelry, watches, pins or any other such items should be worn or brought into food processing areas

19	Tap water or water suitable for drinking	□ Water used for production, treatment, etc. should be regulated by the legislation of authorized state bodies (territorial, central) □ When water suitable for drinking water is used, water quality is tested at least once a year and the test report/protocols are kept for one year	EEU Decision No. 94, Annex N 3 Section B Chapter YI TP TC 021/2011 Ch.3 Art.12
20	Regular cleaning of the water storage tank	□ Wash and keep clean on a regular basis (If you do not use a water tank, exclude this item from your scoring results)	
21	Periodic inspection of stylizers and water purifier	□ The result is recorded (only when using water suitable for drinking and installing a sterilizer/water purifier)	

4.4. Training of employees (EEU Decision No. 94 point YIII)

Managers of the food production enterprise shall inspect the personnel engaged in food processing, as well as conduct briefings and/or trainings on food safety and hygiene appropriate in their program to the main areas of their work activities.

Training programs should:
- Provide staff with the knowledge, skills and abilities that will enable them to perform specific tasks related to dairy hygiene and verification of statistical production control, HACCP or a system similar to HACCP;
- Provide practical training to the required degree;
- Provide for personnel testing where necessary;

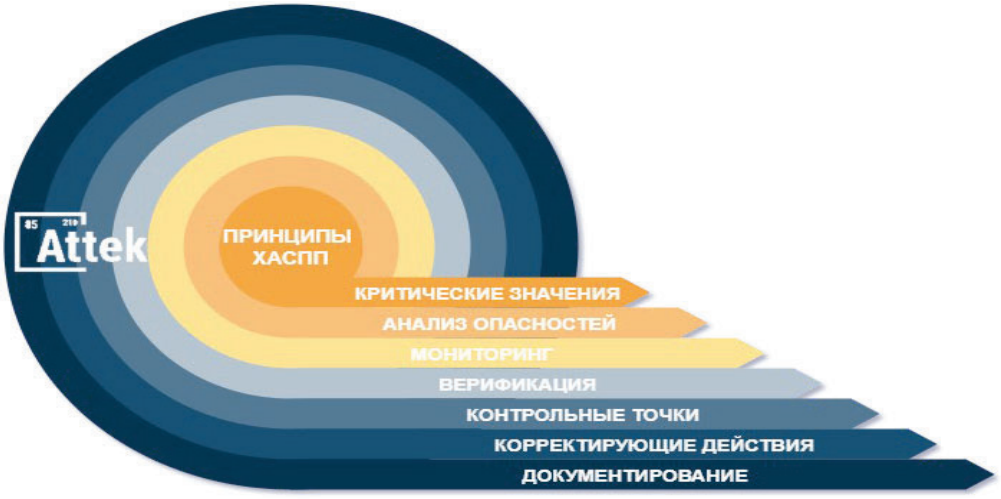
Ensure that personnel involved in process control have the appropriate skills;
- be credentialed and based on professional education requirements;
- Provide for further education for competent persons.

HACCP training program
1 Day
Theory on the HACCP food safety management system (FSMS). Theoretical part from the point of view of legislation. In the practical part, the expert tells and shows in practice how to conduct a risk analysis, identify critical control points in food production (CCP). At the end of the lesson the expert gives homework to be done on the second day of the seminar on HACCP.
Day 2

A day dedicated to practice. You analyze the risks and find critical control points on your own on the basis of the production processes in the enterprise: food production, catering. The expert is always in touch, you can ask questions if you have any difficulties in completing your homework.

Day 3

Checking the developed documentation, making changes, working on errors. Continuation of the theoretical part of the HACCP study, according to the HACCP standard



- Provide staff with the knowledge, skills and abilities that will enable them to perform specific tasks related to dairy hygiene and verification of statistical production control, HACCP or a system similar to HACCP;
- Provide practical training to the required degree;
- Provide for personnel testing where necessary;

Ensure that personnel involved in process control have the appropriate skills;

- be credentialed and based on professional education requirements;
- Provide for further education for competent persons.

HACCP training can be conducted with the involvement of experts from a consulting company or at the Center for Certification and Metrology of the Ministry of Economy and Commerce of the Kyrgyz Republic.

Each trained specialist receives a HACCP internal auditor certificate or a HACCP training certificate.

4.5. Pest control (EEU Decision No. 94 point XI)

Pests are a major threat to food safety and suitability. Pest infestations can occur wherever there are breeding conditions and food is abundant.

Buildings should be renovated: this will help prevent rodent and insect access and eliminate potential breeding sites.

Holes, drains and other places through which rodents and insects can enter the premises should be closed mechanically. Appropriate nets on open windows, doors and shutters will reduce the threat of pests.

Wherever possible, animals other than service dogs should be removed from the dairy processing facility.

The availability of food and water encourages invasion and infestation of the plant site by rodents and insects.

Potential food sources should be stored in containers that are securely protected from pest entry and/or should be placed above ground and away from walls.

It is necessary to properly treat the premises and area with chemical, physical or biological means on a regular basis.

Sanitary control systems should be tested for effectiveness by periodic pre-operational verification inspections or, where applicable, by collecting microbiological samples from the environment and from food contact surfaces, and should be regularly reviewed and adapted to changing circumstances.

What is disinsection, deratization and pest control

The terms "disinfection", "disinsection", and "deratization" refer to measures to destroy organisms that participate in the spread of infectious diseases or are causative agents of such diseases. Deratization refers to measures aimed at killing rodents, and disinsection refers to the extermination of arthropods or insects.

These concepts are also combined under the name of pest control. The term can be translated as "pest control" and means a set of measures to limit the number of pests in a certain area.

For this, there are standard rules to follow:

-inspect the area for signs of pests;
-timely clean the territory and premises, prevent their littering, do not overfill garbage cans and remove waste in a timely manner;
-check for holes and gaps in floors, walls, ceilings, utilities, seals and gaps in doors and windows and repair them;
-store products on racks or pallets, away from walls;
-check the integrity of the containers and packaging of incoming and stored food products at the facility. And yes, pests can come to you from a supplier, so control is needed at this point too;
-control technological openings in basements;
-check the presence and integrity of metal nets on ventilation duct openings;
-Control the condition and integrity of bait stations;
-don't leave food and water accessible to pests.

The facility should have a preventive pest management program in place. It should be formalized, and both employees of the enterprise and representatives of the provider should be involved in its implementation.

The following types of work are performed as part of pest control:

1.Preventive measures aimed at preventing pest infestation of objects.

2.Survey: should be aimed at detecting pests, determining their species composition, studying their habitat conditions, numbers, location and other characteristics that allow choosing the optimal tactics for their elimination or reduction of their numbers. Subjective and objective methods of pest detection are used.

3.Extermination measures. In this case, control and extermination devices, traps are used, which should be numbered and labeled, and their locations should be marked on the store plan with the indication of the numbering of points and symbols.

Means, equipment and materials for pest control must be effective and at the same time safe for humans, as well as have authorization documents: at least a certificate of state registration, declaration of conformity, instructions for use. Means must be stored in the supplier's container in accordance with the storage conditions established by the manufacturers, in a specialized room. And means with a total volume of up to 10 kg should be placed in places preventing their unauthorized use. The label should reflect at least the following information: name and purpose of the product, date of manufacture and expiration date, precautions and information about the manufacturer.

Outdoor rodent control baits must be properly positioned, secured, covered and labeled. The lids of the baits must be closed using the devices provided or recommended by the manufacturer.

Indoor pest control measures include the use of mechanical traps, trigger traps, sticky cardboard traps, but should not include feeding stations.

Records of maintenance and cleaning of these devices should be maintained for each rodent control device.

Monitoring of pest control, as well as its effectiveness

All activities must be carried out in such a way that drugs do not get on raw materials and finished products The facility should maintain records of the services provided by the provider, describing the current level of pest activity and recommendations for additional actions needed to reduce pest activity. The records should include information on the materials used, the pests targeted, the amount of pesticide applied and areas treated, the method of treatment, and the date and time of treatment. It should also include the signature of the employee who performed the treatment.

Below we'll go into more detail on the intricacies of bird control and the specifics of using ultraviolet traps when controlling flying insects.

Prior to pest control, at a minimum, employees should be informed of the planned activities, informed of the date and time of the treatment, reminded of the precautions to be taken, and pre-treatment of the premises should be organized.
When a pest control is considered to have been conducted effectively

Deratization at the facility is considered effective if there are no signs of rodents or traces of their life activity for three months if sanitary and hygienic, sanitary and technical measures are observed.

In case of successful disinfestation, the terms of absence of signs of insects are as follows: more than one month for flies; more than two months for cockroaches, fleas; more than three months for ants, provided that the facility complies with the requirements established by sanitary norms.
Accordingly, a facility is considered rodent-free when all of the above attributes are absent.

UV traps are available as high voltage and adhesive traps. The first ones destroy insects by means of high voltage and do not allow monitoring. They are intended for extermination of insects in premises with non-food products, serve as a barrier to the penetration of insects from the street. UV traps with adhesive backing allow to capture small insects, identify the danger, correct actions and ensure constant monitoring of control points. They are placed in areas with food products, where the entry of insects into the products is unacceptable.
So, here are some specifics on the proper use of UV traps:

-It is necessary to use special fluorescent lamps in them because others will be ineffective;

-If traps are used in areas with unpackaged foodstuffs, only adhesive-backed devices with shatterproof lamps should be used. Otherwise, fragments of insects, glass and phosphor can get into the product. Also, do not place any traps over areas where open products are handled;

-It is necessary to keep a time log of the UV lamps, otherwise they will become ineffective, although it will not be noticeable externally. It is better to change the lamps at the beginning of spring, when insect activity increases. The logbook should include the individual number of the UV trap, the name of the lamp, the date it was put into operation, the total running time and the tentative date of lamp replacement;

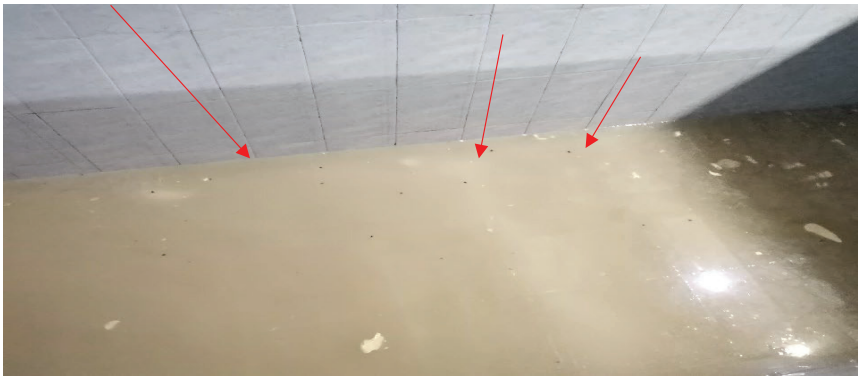
-The light trap should always be placed away from any natural light sources or its effectiveness will be reduced;

-Particularities of bird control

To solve the problem, a complex of measures, equipment and means is applied: chemical agents, spikes, sound repellents, nets, etc. are used. The solution is selected depending on the specific situation, and it is advisable to involve specialists for this purpose.

2. A food facility experienced a severe gnat infestation. A technician conducted a thorough inspection of the facility, including a look at the roof air intake. The filter was so dirty that it had partially collapsed, allowing small insects to fly in. In addition, there was a lot of lighting on the outside of the building during the evening hours: lights located above the building entrance and over the loading gate were attracting pests.

The problem was solved by replacing the filter grille, reducing lighting levels to the minimum acceptable for safety and comfort during work operations, and relocating fixtures from the gate and space above the front door to poles in the parking lot area.



4.6 Customer Complaints and Product Recall Program

Recall - a voluntary recall by a company of products put on the market when there is reason to believe that the product is of poor quality or counterfeit, in accordance with the provisions of the Food Control Authorities.

"Withdrawal" does not imply withdraw**al** from sale or restocking.

Withdrawal is the withdrawal or correction by a company at will of a distributed product that involves a minor infringement, that does not require legal action by regulatory authorities, or that does not involve a violation of technical regulations or a health hazard.

The main reasons for the recall:

- Product contamination (btological, chemical or physical)
- defective packaging
- Residues of prohibited pesticides, drugs, dyes or food additives
- Product components containing an unlabeled ingredient, especially if this ingredient is an allergen or sensitizing component (e.g. sulfites)
- Fake
- Disease detected by the WU MA of the Kyrgyz Republic
- Important points on the recall program is carried out, according to:

- PP KR dated February 18, 2020 No. 93 "On ensuring food safety"

-Provision on implementation of withdrawal and recall of food products that do not meet the established requirements to their quality and safety, according to Annex 1;

-Waste Control

-Provision on the procedure for utilization and destruction of food products that do not meet the established requirements to their quality and safety, according to Appendix 2.

Scheme for reviewing a CLIENT'S CHALLENGE

Customer-Receiving a customer complaint-Dissemination of information-Investigation of the cause-Decision to revoke-Selecting the responsible department-Corrective action plan-Monitoring-Dissemination of information

9. Recall and disposal		
30	Recall and disposal procedures	□ Implementation of consumer notification methods, collection methods and reporting procedures, and proper disposal

4.7 Control of drainage system waste (point IY of the EEU Decision No. 94)

Drainage

Drainage devices must fulfill their function properly. They must be designed and constructed to minimize the risk of product contamination.
In areas where drainage channels are fully or partially open, they must be designed in such a way that the waste water is guaranteed not to flow from a contaminated area into a clean area, in particular into a clean area where foodstuffs presenting a high risk to the end user are handled (processed).

Waste - product residue or additional product generated in the process of or at the end of a particular activity and not used in direct connection with that activity
Production wastes - Remains of raw materials, materials, substances, products, items, formed in the process of production, works (services) and lost completely or partially original consumer properties.

5. HACCP 7 principles and 12 procedures

5.1 Briefly on HACCP and the 12 procedures

What does the concept of HACCP mean?

HACCP- "Hazard Analysis and Critical Control Points"
It is a science-based approach to guarantee the production of safe products by identifying and controlling hazards.
Developed in the United States in the 1960s as part of the **Space Program** to prevent food poisoning in space.
The HACCP principles have been standardized and adopted as mandatory legal requirements in many countries around the world.
Basic requirements for manufacturers of food products:
1.List of hazards.
2.A list of critical control points of the production process.
3.Limit values of parameters, controlled and critical control points.
4.Procedure for monitoring critical control points of the production process (active traceability)
5.Establishment of the procedure for actions in case of deviation of indicator values.
6.Periodicity of the inspection.
7.The manufacturer is obliged to keep and maintain documentation on the implementation of the measures.

HACCP system
5 preliminary steps
1.Establishment of HACCP group.
2.Product Description.
3.Determining the intended method of consumption of the product.
4.development of block diagram of technological process.
5.check the block diagram of the technological process.

7 principles of HACCP
1.Conducting hazard analysis
2.Determination of critical control points
3.setting critical limits
4.Establishment of a CTC monitoring system
5.Establishment of corrective actions in case the CTC goes out of control
6.Establishment of a procedure for verification of the HACCP system to confirm its effectiveness.
7. Establishment of record-keeping procedures

Рис. 3. 12 этапов разработки системы ХАССП

Preparatory steps, formation of HACCP group

The food safety team must have multidisciplinary knowledge and experience in the development and implementation of a food safety management system that includes knowledge of the organization's product,

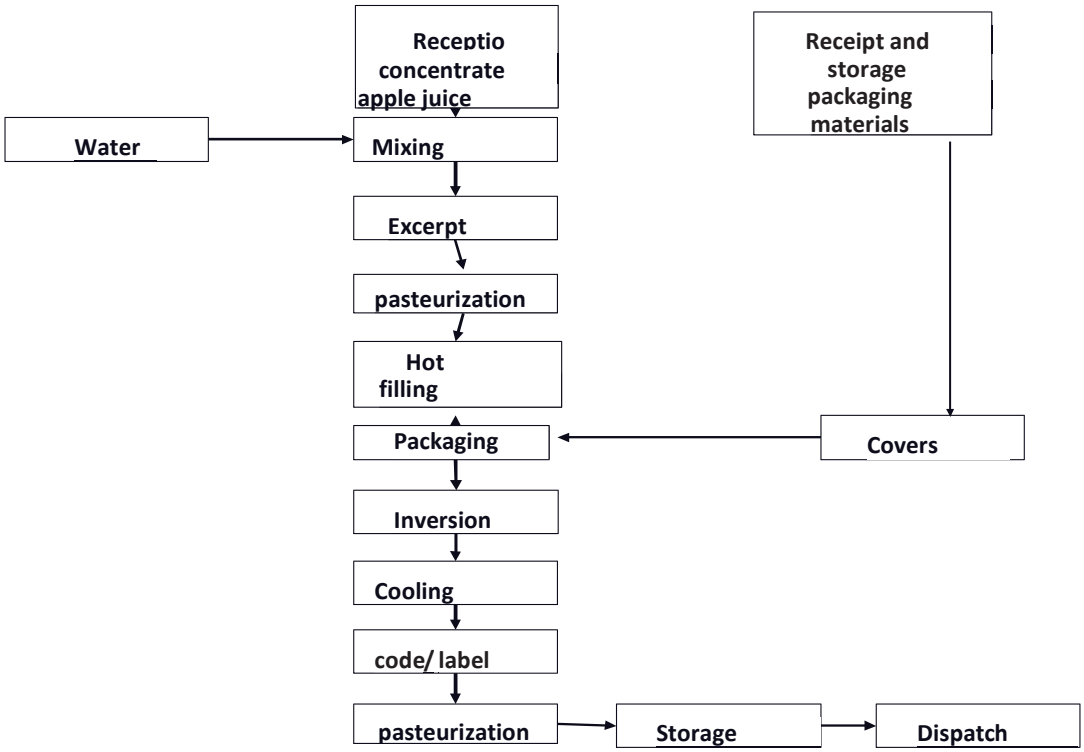
processes, equipment and hazards within the scope of the food safety management system records must be maintained to demonstrate that the team has the required knowledge and experience.

Product Description:
1..Product Name
2.Composition of the product
3.Chemical/physical characteristics (pH)
4.Type of processing (heat treatment, freezing, salting, smoking, etc.)
5.Method of packaging
6.Shelf life and storage conditions
7. Method of sale/method of marketing
8.Intended consumer (for general use, children, elderly)
9.Mode of use (direct and possible)

Drawing a flowchart and describing the process
Process flowcharts are developed by product or process category and provide a basis for evaluating the possible occurrence or amplification of hazards in food products.
Blockchains should cover:
Sequence and interaction of all stages of the process;
Processes that are performed outside the organization and subcontracted work;
Stages where raw materials, ingredients and intermediates are introduced into the process;
The stages at which recycling and reuse take place;
Stages at which final, intermediate and by-products and wastes are removed

Verification of the block diagram and process description;
The block diagram should be checked in the field - to compare the developed document with the actual processes taking place
Validated flowcharts need to be maintained as protocols

Example: Apple juice in a glass bottle suitable for long-term storage



1.Whether all ingredients and packaging materials are accounted for
2.Sequence of operations including introduction of raw materials into the process
3.Time and temperature characteristics for all raw materials, intermediate and final products, including possible delays.
4.Reuse and rework loops.
5.Design features of the equipment

HACCP principles
1.Conducting hazard analysis
2.Determination of critical control points
3.Establishment of critical limits
4.Establishment of a CTC monitoring system
5.Establishment6 of corrective actions in case of CTC out of control CTC out of control
6. Establishment of the procedure for verification of the HACCP system
7.Establishment of record-keeping procedures

5.2 HACCP principles. Conducting hazard analysis

Recommendations of the Codex Alimentarius Commission
List all potential hazards:
-biological;
-chemicals;
-physical;
Analyze and identify significant hazards
Consider possible control measures

Risk Analysis Worksheet
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Ingredients or Processing steps	Potential risks identified, controlled or improved at this stage	Should this potential risk be considered in the HACCP plan? (Yes / No)	Why? (Justification for the decision made in the previous column)	Measures to prevent, eliminate, or mitigate the risks included in your HACCP plan?	Is this step a control point (CPT)? (Yes / No)

Hazards are biological, chemical, physical agent in a food product or a condition of a food product that has the potential to adversely affect human health.
Hazards can be biological, chemical and physical.

Hazard Analysis Worksheet (Yogurt)

Composition or Processing Stages	Possible hazards that are introduced, controlled, or increased at this stage	Does this potential hazard need to be addressed in the HACCP Plan? (Yes/No)	Why? (Justification of the decision made in the previous column)	What measures will be implemented to prevent, eliminate or mitigate the hazards in your HACCP plan?	Is this step a point of control (POC)? (Yes/No)
1 Acceptance: Raw milk	BIOLOGICAL Presence of pathogens (Intestinal pathogens such as Salmonella)	Yes	The formation and growth of pathogens in raw milk is associated with storage temperature violations. Moderate to severe disease is possible.	Late pasteurization	No
	CHEMICAL Residues of antibiotics, veterinary drugs	No	Ongoing residue analysis is part of the preconditioning program associated with raw milk procurement. Raw milk with harmful levels of substances is unlikely to be accepted.		
	PHYSICAL Presence of foreign objects	No	Although incoming raw milk may contain foreign substances due to improper milking, the filtering process can eliminate these substances.		
2 Acceptance: milk powder	BIOLOGICAL Presence of pathogens (Intestinal pathogens such as Salmonella)	Yes	*Salmonella* can cause moderate to severe forms of illness that are caused by the use of nonfat dry milk powder (NFDM).	Late pasteurization	No
	Chemical No				
	PHYSICAL No				
3 Acceptance: Sugar	BIOLOGICAL No				
	CHEMICAL No				
	PHYSICAL No				
4 Acceptance: leaven	BIOLOGICAL No				

Composition or Processing Stages	Possible hazards that are introduced, controlled, or increased at this stage	Does this potential hazard need to be addressed in the HACCP Plan? (Yes/No)	Why? (Justification of the decision made in the previous column)	What measures will be implemented to prevent, eliminate or mitigate the hazards in your HACCP plan?	Is this step a point of control (POC)? (Yes/No)
	CHEMICAL No				
	PHYSICAL No				
5 Acceptance: Packaging products	BIOLOGICAL No				
	CHEMICAL Contamination by harmful substances	No	Only products that meet standards with a supporting quality control document will be purchased and accepted.		
	PHYSICAL No				
6 Acceptance control (Raw milk)	BIOLOGICAL Pathogens (Intestinal pathogens such as Salmonella)	Yes	The emergence and growth of pathogens in raw milk is associated with a violation of the storage temperature regime. Moderate to severe disease is possible.	Late pasteurization	No
	CHEMICAL Residues of antibiotics, veterinary drugs	No	Continuous residue analysis is part of the preconditioning program related to raw milk procurement. Only raw milk is purchased where proper feeding management, antibiotics and veterinary medicines have been implemented. Raw milk with harmful levels of substances is unlikely to be accepted		
	PHYSICAL No				
7 Filtration	BIOLOGICAL No				
	CHEMICAL Disinfectant residues	No	Excessive disinfectants are unlikely due to an effective SSOP (Sanitary Standard Operating Procedures) sanitation program. Unlikely possibility of disease and damage.		
	PHYSICAL Presence of foreign substances	No	If the filter mesh ruptures, foreign matter may be present, but proper equipment maintenance and SOPs can eliminate it.		

Composition or Processing Stages	Possible hazards that are introduced, controlled, or increased at this stage	Does this potential hazard need to be addressed in the HACCP Plan? (Yes/No)	Why? (Justification of the decision made in the previous column)	What measures will be implemented to prevent, eliminate or mitigate the hazards in your HACCP plan?	Is this step a point of control (POC)? (Yes/No)
8 Storage (Raw milk)	BIOLOGICAL Pathogen growth (Intestinal pathogens such as Salmonella)	No	The emergence and growth of pathogens in raw milk is associated with a violation of the storage temperature regime. Moderate to severe illnesses are possible. The milk storage temperature can be regulated by a water cooling system.		
	Pathogen contamination	No	Improper cleaning can result in residual microorganisms and microbial contamination can occur with incoming air, but contamination is unlikely due to SSOP's effective sanitation program.		
	CHEMICAL Disinfectant residues	No	Excessive disinfectants are unlikely due to an effective SSOP (Sanitary Standard Operating Procedures) sanitation program. Comparatively low probability of disease and injury		
	PHYSICAL No				
9 Storage (Milk powder)	BIOLOGICAL Pathogen contamination	No	Improper control of raw materials, such as open packaging, can cause microbial contamination, but this is unlikely due to effective operating procedures.		
	CHEMICAL No				
	PHYSICAL Contamination by foreign substances	No	Improper control of raw materials, such as open packaging, can cause foreign matter contamination, but this is unlikely due to effective operating procedures.		
10 Storage (Sugar)	BIOLOGICAL Pathogen contamination	No	Improper control of raw materials, such as open packaging, can cause microbial contamination, but this is unlikely due to effective operating procedures.		

Composition or Processing Stages	Possible hazards that are introduced, controlled, or increased at this stage	Does this potential hazard need to be addressed in the HACCP Plan? (Yes/No)	Why? (Justification of the decision made in the previous column)	What measures will be implemented to prevent, eliminate or mitigate the hazards in your HACCP plan?	Is this step a point of control (POC)? (Yes/No)
	CHEMICAL No				
	PHYSICAL Contamination by foreign substances	No	Improper control of raw materials, such as open packaging, can cause foreign matter contamination, but this is unlikely due to effective operating procedures.		
11 Storage (Lactic Acids)	BIOLOGICAL Pathogen contamination	No	Improper control of raw materials, such as open packaging, can cause microbial contamination, but this is unlikely due to effective operating procedures.		
	CHEMICAL No				
	PHYSICAL Contamination by foreign substances	No	Improper control of raw materials, such as open packaging, can cause foreign matter contamination, but this is unlikely due to effective operating procedures.		
12 Storage (Packaging)	BIOLOGICAL Pathogen contamination	No	Improper control of raw materials, such as open packaging, can cause microbial contamination, but this is unlikely due to effective operating procedures.		
	CHEMICAL No				
	PHYSICAL Contamination by foreign substances	No	Improper control of raw materials, such as open packaging, can cause foreign matter contamination, but this is unlikely due to effective operating procedures.		

Composition or Processing Stages	Possible hazards that are introduced, controlled, or increased at this stage	Does this potential hazard need to be addressed in the HACCP Plan? (Yes/No)	Why? (Justification of the decision made in the previous column)	What measures will be implemented to prevent, eliminate or mitigate the hazards in your HACCP plan?	Is this step a point of control (POC)? (Yes/No)
13 Weighing (Raw milk)	BIOLOGICAL Pathogen growth (Intestinal pathogens such as Salmonella) Pathogen contamination	No No	The risk of pathogen growth is low due to the short-term nature of this stage. Improper cleaning can lead to microbial contamination with incoming air, but this is unlikely due to SSOP's effective sanitation program.		
	CHEMICAL Disinfectant residues	No	Excessive disinfectants are unlikely due to an effective SSOP (Sanitary Standard Operating Procedures) sanitation program. Possible illnesses and injuries are relatively unlikely.		
	PHYSICAL No				
14 Weighing (Milk powder)	BIOLOGICAL Pathogen contamination	No	Improper cleaning can result in residual microorganisms and microbial contamination can occur with incoming air, but contamination is unlikely due to SSOP's effective sanitation program.		
	CHEMICAL Disinfectant residues	No	Excessive disinfectants are unlikely due to an effective SSOP (Sanitary Standard Operating Procedures) sanitation program. Possible illnesses and injuries are relatively unlikely.		
	PHYSICAL No				
15 Weighing (Sugar)	BIOLOGICAL No				
	CHEMICAL Availability of disinfectants	No	Excessive disinfectants are unlikely due to an effective SSOP (Sanitary Standard Operating Procedures) sanitation program. Possible illnesses and injuries are relatively unlikely.		

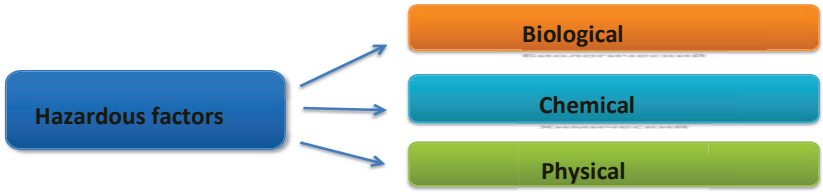
Composition or Processing Stages	Possible hazards that are introduced, controlled, or increased at this stage	Does this potential hazard need to be addressed in the HACCP Plan? (Yes/No)	Why? (Justification of the decision made in the previous column)	What measures will be implemented to prevent, eliminate or mitigate the hazards in your HACCP plan?	Is this step a point of control (POC)? (Yes/No)
	PHYSICAL No				
16 Weighing (Lactic Acids)	BIOLOGICAL No				
	CHEMICAL Availability of disinfectants	No	Excessive disinfectants are unlikely due to an effective SSOP (Sanitary Standard Operating Procedures) sanitation program. Possible illnesses and injuries are relatively unlikely.		
	PHYSICAL No				
17 Mixing the ingredients	BIOLOGICAL Growth of pathogens such as Salmonella.	No	The possibility of temperature disturbance at this stage is unlikely due to the short-term nature of the process.		
	CHEMICAL Excess disinfectants	No	Excessive disinfectants are unlikely due to an effective SSOP (Sanitary Standard Operating Procedures) sanitation program. Possible illnesses and injuries are relatively unlikely.		
	PHYSICAL No				
18 Homogenization	BIOLOGICAL Growth of pathogens such as Salmonella.	No	The possibility of temperature disturbance at this stage is unlikely due to the short-term nature of the process.		
	CHEMICAL Excess disinfectants	No	Excessive disinfectants are unlikely due to an effective SSOP sanitation program. Possible illnesses and injuries are relatively unlikely.		
	PHYSICAL No				

Composition or Processing Stages	Possible hazards that are introduced, controlled, or increased at this stage	Does this potential hazard need to be addressed in the HACCP Plan? (Yes/No)	Why? (Justification of the decision made in the previous column)	What measures will be implemented to prevent, eliminate or mitigate the hazards in your HACCP plan?	Is this step a point of control (POC)? (Yes/No)
19 Heating	BIOLOGICAL Pathogen residues Growth of pathogens such as Salmonella.	Yes	This is the only step in which heating regulates the destruction of pathogens.	Control the proper temperature and time of the heating process to kill pathogens.	Yes KTK1 (B)
	CHEMICAL Excess disinfectants	No	Excessive disinfectants are unlikely due to an effective SSOP sanitation program Possible illnesses and injuries are unlikely.		
	PHYSICAL No				
20 Cooling	BIOLOGICAL Growth of heat-resistant spore-forming bacteria	No	Since the time span of this stage is short, the likelihood of pathogen growth is unlikely.		
	CHEMICAL No				
	PHYSICAL No				
21 Sourdough	BIOLOGICAL Growth of heat-resistant spore-forming bacteria	No	Since the time span of this stage is short, the likelihood of pathogen growth is unlikely.		
	CHEMICAL No				
	PHYSICAL No				
22 Bottling and weighing	BIOLOGICAL Pathogen contamination	No	Improper cleaning and bottling on equipment can cause residual microorganisms or contamination, but this is unlikely due to SSOP's effective sanitation program.		

Composition or Processing Stages	Possible hazards that are introduced, controlled, or increased at this stage	Does this potential hazard need to be addressed in the HACCP Plan? (Yes/No)	Why? (Justification of the decision made in the previous column)	What measures will be implemented to prevent, eliminate or mitigate the hazards in your HACCP plan?	Is this step a point of control (POC)? (Yes/No)
	CHEMICAL Excess disinfectants		Excessive disinfectants are unlikely due to an effective SSOP sanitation program. Possible illnesses and injuries are unlikely.		
	PHYSICAL Contamination by foreign substances	No	The possibility of ingestion of foreign matter is unlikely, provided the unit and equipment are under proper sanitary control.	Identification of metals at a late stage	No
23 Identification of metals	BIOLOGICAL No				
	CHEMICAL No				
	PHYSICAL Metals	Yes	The likelihood of metal contamination is very high and may result in mild to moderate damage. The risk of metal re-contamination after this stage is low.	Functioning metal detector / scraping mechanism	Yes KTK2 (F)
24 Fermentation	BIOLOGICAL Growth of heat-resistant spore-forming bacteria	No	Controlling the appropriate time and temperature can prevent the growth of pathogens.		
	CHEMICAL No				
	PHYSICAL No				
25 Storage	BIOLOGICAL No				
	CHEMICAL No				
	PHYSICAL No				

Composition or Processing Stages	Possible hazards that are introduced, controlled, or increased at this stage	Does this potential hazard need to be addressed in the HACCP Plan? (Yes/No)	Why? (Justification of the decision made in the previous column)	What measures will be implemented to prevent, eliminate or mitigate the hazards in your HACCP plan?	Is this step a point of control (POC)? (Yes/No)
26 Pre-departure control	BIOLOGICAL No				
	CHEMICAL No				
	PHYSICAL No				
27 Sending	BIOLOGICAL No				
	CHEMICAL No				
	PHYSICAL No				

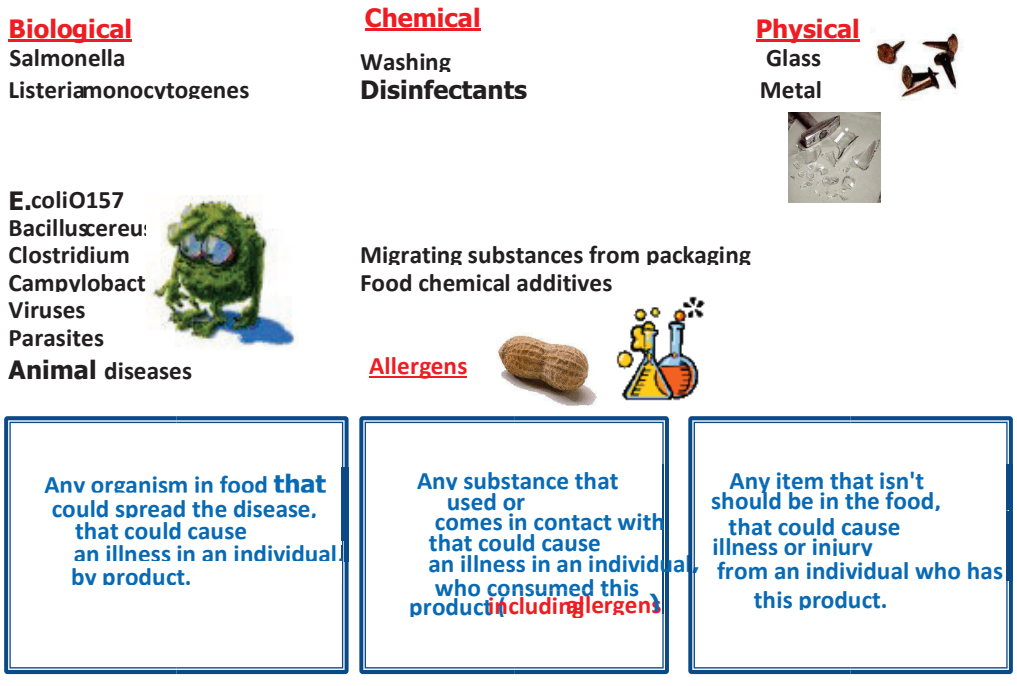
A distinction is made between the following hazards:



Biological hazards include pathogenic bacteria, viruses and parasites salmonella, listeria, staphylococcus, botulism).

Chemical hazards include substances that may cause illness or injury through non-delayed or prolonged exposure (pesticides, radionuclides, heavy metal salts, mycotoxins, residues of detergents and disinfectants, food additives of limited use) and may also include allergens.

Physical hazards include any physical material that should not normally be in a food product and may cause illness or injury to the person who consumed the product (shards of glass, plastic, metal)

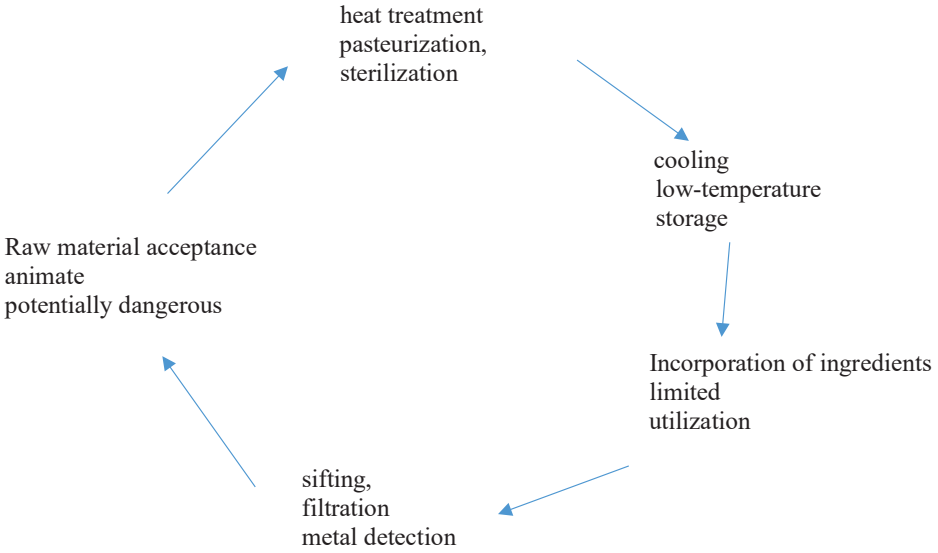


Product contamination is a physical risk if it could result in injury/illness to the consumer.

5.3. Principle 2. Determination of critical control points

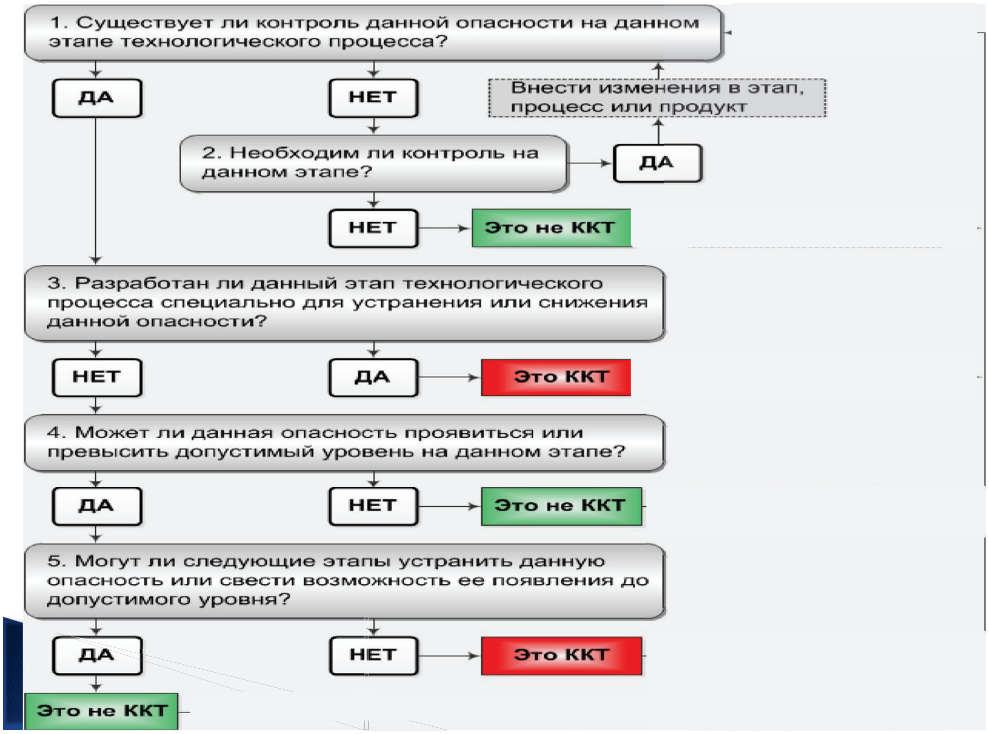
It is necessary to establish control measures for significant hazards identified at the technological stages of production.
The application for determining the CTC is sequential questions to determine if a control point is a critical control point.
Critical Control Point (CCP)
The stage of the technological process at which it is possible to control and prevent, eliminate or reduce the hazard.
Generally, the last stage where a hazard can be effectively managed and after which the hazard does not reoccur.
HACCP Plan.
A shift document based on HACCP principles and containing a methodology (algorithm of actions) to be followed to ensure control of a specific process or procedure.
Significant hazards inherent to a product or associated with a particular process step should be controlled by HACCP(CTC)

CCP



Control steps-any steps by which biological, physical, and chemical risk factors are controlled.
TSC- steps that can and should be controlled to prevent or eliminate food safety hazards, or reduce them to an acceptable level.

Decision tree for CCP



HACCP Plan Form

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Critical Control Points (CCPs)	Risks to be included in the HACCP Plan	Critical limits for each control measure	Monitoring				Corrective actions	Verification actions	Documentation of procedures
			What	How	Frequency	Who			

Example of a HACCP plan (pasteurized milk)

	Table of Contents
KCP number	KKT 2
process	10 Pasteurization
Threat Biological threat	Residues of pathogenic microorganisms and heat-resistant spore-forming bacteria (Salmonella, Campylobacter, enteropathogenic Escherichia coli, Staphylococcus aureus, Yersinia enterocolitica, Listeria monocytogenes, Bacillus wax bacillus)
The reason for the threat	By reducing the pasteurization temperature, pathogenic microorganisms have a chance to survive
Control measures	Temperature and time control (milk flow volume) by ultra-high temperature heating method
Critical limits	Heat pasteurization temperature: not lower than 125°C. (Normally, the pasteurizer operates at 130 ˚C as the set temperature. The flow switching valve is triggered automatically when the temperature drops below 125 ˚C)
Monitoring method What How Frequency Responsible person	Pasteurizer heating temperature ① Automatic thermometer ② Manual thermometer in production The start and end times of the pasteurization process, and every hour during production, a visual observation of the thermometer will be made and recorded. (for ① and ②) Person in charge of the pasteurization process
Corrective actions Correction Responsible person	When the thermal pasteurization temperature has deviated from the critical limit • If the FDV (flow diverter valve) is triggered automatically, milk will collect in the container. The following operation will therefore be carried out. • Dispose of the milk from the pasteurizer and the milk from the storage tank (next stage of production) can be used for production. • Find out the cause of the abnormality (temperature drop) • Once the occurrence factor is confirmed, CIP cleaning will be performed and the process will be restarted. (By the person responsible for the pasteurization process. Each time a deviation occurs.) • If the FDV does not function properly, stop the entire production process manually. (By the person responsible for the pasteurization process. Each time a deviation occurs.) • Inform the production manager • Stop shipping product (reuse milk for processing) • Re-pasteurize the milk from the pasteurizer and storage tank • Find out the cause of the abnormality (temperature drop) • Once the occurrence factor is confirmed, a CIP wash will be performed and the process will be restarted. (By the person responsible for the pasteurization process. Each time a deviation occurs.)
Verification method What How Frequency Responsible person	• Checking the operation of the flow distribution valve (before and after production, by the person responsible for the pasteurization process) • Confirmation of the monitoring record (every production day, by the production manager) • Check of pasteurizer and homogenizer operability (quarterly, by the person responsible for each process) • Calibration of automatic thermometer and manual thermometer in production (once a year, by the person responsible for each process) • Confirmation of corrective action record (each time a corrective action is performed by the production manager) • Confirmation of the microbial test result (each batch, by the quality control staff).
Title of document	Daily Pasteurization Report, Pasteurizer Maintenance and Daily Inspection Report, Corrective Action Report, Automatic and Production Area Thermometer Calibration Report, Microbiological Test Report.

5.4.Principle 3: Establish critical limits for each CCP

Identify and confirm critical limits for each CTC
Critical limits should be measurable
Controlled parameters may include temperature, time, moisture pH, water activity, organoleptic parameters.
The rationale for the selected critical limits must be documented.
Critical limit-a criterion that separates the acceptable from the unacceptable.
The limit value is set to determine if the CTC is under management.

Critical limits should be based on a scientific point of view

CRITICAL LIMITS MAY BE BASED ON FACTORS SUCH AS:
Temperature, time physical measurements humidity, water activity, pH factor titratable acidity, salt concentration, active chlorine level viscosity, preservatives
Example: shop for preparation of meat semi-finished products from meat (beef)

Biological hazard abdominal microorganisms (Salmonella spp.)

process	KKT	Critical limits
Preparation	Yes	Oven (oven) temperature - 155˚F Time-20 sec. The thickness of the dough is 1cm Composition of semi-finished product Humidity in the oven: 10%

For heat treatment these values are time, humidity, temperature. The selected values should be based on the specifics of the technological process and ensure its control. Critical limits are closely related to preventive actions, which must be established for each hazardous factor. Preventive actions are aimed at eliminating the possibility of consequences that may arise in the absence of control.

5.5.Principle 4. Establish monitoring procedures for each CTC

Establish procedures for the use of monitoring results.
Establish CTC monitoring requirements to regulate the process and maintain control.
Process regulation when monitoring results indicate a trend toward loss of control at the CTC.
Identification of responsible person
Set monitoring frequencies
Keeping protocols on the results of monitoring.
Monitoring - A planned sequence of observations or measurements to assess whether the CTC is arriving under control and to produce accurate documentation for future use in verification.
The methods and frequency of monitoring should enable timely identification of critical limit exceedances, adjustments and product isolation.
Monitoring must be **accurate and in real time.**
Physical and chemical measurements are prioritized over microbiological testing because they can be performed quickly (during the production process)
For example:
Measuring the temperature on the product surface during acceptance
Checking the operation of the filter integrity metal detector
Measurement of the temperature in the thickness of the product after heat treatment
Temperature measurement in cold storage chambers.
Pn / acidity level measurement

№ п/п	Этап процесса, объект контроля	Контролируемая опасность (показатель)	Процедуры мониторинга				Записи и регистрация результатов	Коррекции и корректирующие действия
			Что измеряется?	Каким образом?	Периодичность	Кто отвечает или выполняет?		
1.1	Приёмка – входной контроль сырого молока	Показатели химической опасности и технологические: остатки моющих и дезинфицирующих средств	Ингибирующие вещества, фальсификация	ГОСТ Р 51600	1 раз в 10 дней для каждого сдатчика	ПТЛ	Журнал контроля поступающего сырья	Возврат поставщику, переоценка, подбор поставщика. Подбор ассортимента

CHALLENGES
Recognize the importance of monitoring
Determine "what" you will monitor
" How " will you monitor
"How often" will you monitor
"Who" will monitor the "person in charge"
Types of monitoring
Observations
Measurements
Continuous
Periodic
Quality
Quantitative

FOR EXAMPLE: SIEVE
Track what? *SIEVE*
How to track? *Visually*
When to track? *At the beginning and end of shift.*
Who should control? *Production worker*
Review monitoring records observe trends adjust the process avoid deviations
May identify discrepancies/deviations from standard operations.
May indicate the need for equipment maintenance
Create an entry log;
Identify who is responsible (position)
What is monitored
How monitoring will be conducted
When, how often (frequency) monitoring will be conducted
Where monitoring will take place
Protocols confirming compliance with the CoP.

HACCP Plan Form

Critical Control Points (CCPs)	Risks to be included in the HACCP Plan	Critical limits for each control measure	Monitoring				Corrective actions	Verification actions	Documentation of procedures
			What	How	Frequency	Who			

5.6.Principle 5: Establish corrective action procedures for each CCP

Corrective Action Objectives:

1.Find the cause of deviation and their timely elimination

2.After the corrective action, control for resumption of CTC.

3.Whether all measures have been taken to prevent a second rejection.

4.Product dangerous to health, does not enter the retail network

5.Persons with a thorough understanding of the HACCP process, product and plan should be designated as responsible for implementing corrective actions.

6.The sooner a deviation is detected, the easier it is to apply corrective action and the greater the opportunity to minimize the amount of unsafe product.

Develop specific corrective actions for each CTC to address deviations

Corrective actions taken if critical limits are exceeded shall be described in the HACCP plan

The cause of the discrepancies has been identified and the parameters managed by the CCP have been brought back under control.

Repeat non-compliance warned

Management of potentially hazardous products to prevent them from entering the trade network

Documentation of corrective actions and actions with potentially hazardous product

Planned corrections and corrective actions taken if critical limits are exceeded shall be described in the HACCP plan.

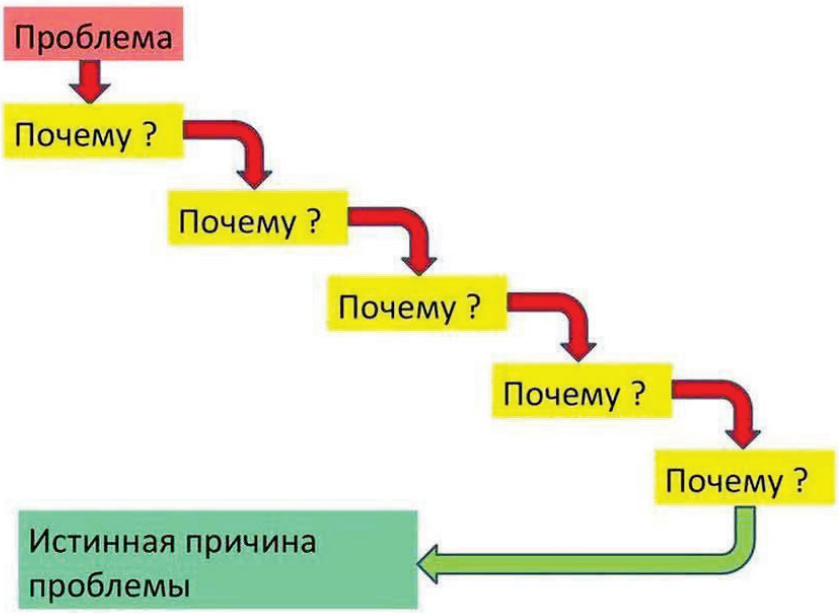
HACCP Plan Form

Critical Control Points (CCPs)	Risks to be included in the HACCP Plan	Critical limits for each control measure	Monitoring				Corrective actions	Verification actions	Documentation of procedures
			What	How	Frequency	Who			

These actions shall ensure that the cause of nonconformities is identified, that parameters managed in the CTC are brought back under control, and that recurrence of the nonconformity is prevented.

***For example*; the** milk temperature in the pasteurizer has dropped below the critical limit, stop the milk flow until the temperature is restored, check the heating cooling equipment and determine the cause of the temperature deviation is repaired if necessary to resume.

Name		OPC		Journal Entry	
		Yes(✓)	Title of the document	Yes(✓)	Title of the document
1	Cleaning, disinfection of machinery, equipment and appliances				
2	Calibration of instrument (thermometer, pressure gauge, flow meter, etc.) and equipment (sterilization, water purification)				
3	Water quality control implementation plan				
4	Pest elimination and monitoring works				
5	Waste storage and disposal				
6	Checking the acceptance of raw materials and shipment of finished products				
7	Inspection of food samples				
8	Measures in case of emergency (contacts of emergency services, Ministry of Health, etc.)				
9	Measures for recalled products, actions for returned products (place of storage and method of disposal of recalled and returned products)				
10	Conducting medical examinations and fecal tests on employees				
11	Hand washing, personal hygiene control, health check before starting a shift				
12	Assessing knowledge and delivering training				



The order in which corrective actions are performed;

Corrective action, an action aimed at eliminating the cause of a detected nonconformity or other undesirable situation.

-identifying outliers.

-Follow the documented procedure to determine the cause of the deviation.

Taking certain steps to eliminate the deviation.

Addressing other issues to avoid a similar situation in the future

Records of corrective actions and corrective action;

Up-to-date records of product production.

A standardized form containing:

Rejection.

Causes of deviations.

Reason for product retention.

The date and code of the withheld product.

Quantity of potentially hazardous products.

Information on further use and/or return of products to the technological process

Name of person in charge.

HACCP Plan Form

Critical Control Points (CCPs)	Risks to be included in the HACCP Plan	Critical limits for each control measure	Monitoring				Corrective actions	Verification actions	Documentation of procedures
			What	How	Frequency	Who			

5.7.Principle 6. Establish verification procedures

The purpose of verification is to ensure that the system is functioning as intended and is updated based on currently available information
Verification involves the use of methods, procedures or tests, in addition to those used in monitoring, to establish whether the HACCP system is working as intended The verification process can be divided into continuous and periodic phases.The resultant system minimizes the need to sample and test large quantities of product.
For example: a CTC verification event.
Calibration of monitoring instruments.
Analyze documentation and perform calibration.
Targeted sampling and testing.
Analysis of CTC documents.
HACCP system verification.
Observations and internal audits.
Microbiological testing of the final product.
Government inspections/third party audits.

VALIDATION AND VERIFICATION

There are two types of procedures for confirming that your HACCP system is functioning effectively:
Validation (confirmation) - obtaining a food safety certificate confirming that the management measures implemented according to the HACCP plan and the production program of mandatory preliminary measures are capable of being effective.
Verification (**verification**) - confirmation of compliance with established requirements by providing objective evidence.
Validation is performed when products are developed before they are released to the market. In order to ensure that the released products meet the requirements, the products contain ingredients in the specified quantities and all their properties (such as taste, color, consistency, etc.) are also within normal limits. If Validation is not properly carried out before shipment, it is carried out at the customer's premises. This is only allowed in certain cases, for example, if the customer needs the product to start developing his own product. Such a product can only be delivered to the customer if its safety for the customer has been confirmed and the validation results are within the normal range.

Verification Procedures

Three basic verification procedures:
I. Review of records
II. Calibration of monitoring instruments, including other instruments
III. Product testing

Verification/validation procedures

Verification procedures that do not include monitoring of the TOC are not end-of-process quality assurance, as an effective HACCP plan should be sufficient to eliminate hazards. Validation with respect to HACCP processes can be performed during the analysis of HACCP processes to ensure that the HACCP plan is working correctly, monitoring of the TOC is being conducted, and records of

corrective actions are being maintained. This table defines independent experts as "other than those who prepared the HACCP plan" and may include "additional technical expertise as well as laboratory testing."

Example of Verification Procedures

Action	Frequency	Responsible	Control
Verification of the planning procedure	Annually or when the HACCP plan changes	HACCP Team Leader	Head of organization
Initial validation of the HACCP plan	Before and during the initial implementation of the plan	Independent expert(s)	HACCP group
Subsequent verification of the process plan, change of HACCP equipment	When the limits of the KKT change, significant changes after a system failure, etc.	Independent expert(s)	HACCP group
Verification of KCP monitoring Cooking temperature monitoring)	As described in the plan (e.g. once per shift	According to the HACCP plan (e.g., line dispatcher)	According to the HACCP plan (e.g. quality control department)
Verification of corrective action monitoring records	Once a month actions to show compliance with the plan	Quality Assurance Division	HACCP group
Comprehensive verification of the HACCP plan	Once a year	Independent expert(s)	Head of organization

Recommended

That periodic comprehensive verification of the HACCP plan be carried out by an impartial independent body: internal or external bodies

Verification shall include:evaluation of the hazard analysis and each element of the HACCP plan, verification of all flowcharts and related plan records.

The results obtained can be used to make changes to improve or correct deficiencies in the HACCP plan.

Verification is a step that the HACCP team can use to see if their plan is working or not.

Regular process analysis is paramount to ensure that the process is evolving, keeping pace with changes in the organization's people, changes in processes, especially due to changes in raw material supply, and changes in the business itself.

Without regular verification, a HACCP plan will be a pile of documentation that gathers dust in a closet.

Validation process

Validation- part of the verification system

Company, confirms that the HACCP Plan controls the identified risks in the validation process

The company has evidence of how each KCP was installed

For example:

Milk sterilization: confirmation of sterilization time and temperature for a large number of microorganisms

Re-validation Frequency: At least one year after the initial HACCP plan is developed - Any change in processes may affect the risk analysis

Evaluation of the implementation of the HACCP Plan

Confirmation of the actual operation of the HACCP plan

1.Is monitoring conducted according to the established frequency of the HACCP plan?

2.Are the instruments set up and usable properly?

3.Are the instruments working accurately in good condition?

4.Is the instrument validated according to the established HACCP plan?
5.Is monitoring data recorded instantly and accurately?
6.In case of deviation from the operating limit, are corrective actions taken?
7.Are corrective actions properly recorded?
8.Is any method of verification, such as product testing, conducted in accordance with the HACCP plan?
9.Are the results of the verification method properly recorded?

HACCP Plan Form

Critical Control Points (CCPs)	Risks to be included in the HACCP Plan	Critical limits for each control measure	Monitoring				Corrective actions	Verification actions	Documentation of procedures
			What	How	Frequency	Who			

Verification of records and evaluation
Review (verification) of records
The record is complete and correct
The specified control is suitable
If the CoP is not appropriate, appropriate corrective actions are taken
Product validation and/or testing is conducted in accordance with the HACCP plan
Verification of records is done at the right time
Verification of records and evaluation
Documents for evaluation are required.
KCP monitoring records.
Records of corrective actions by the TSC.
Inspection records.
Sanitation monitoring records.
HACCP Noncompliance Report.
Describe the observational data.
A simple and concise explanation available from the production side.
The report should contain material issues, the results of the observations should reflect on potential risks.
For conciseness, the report should be sorted by the content of the observations.
The report's conclusion should not be based on a personal viewpoint and on an unjustified assessment

HASSP PLAN FORM
CHEDDAR CHEESE

HACCP - Hazard Analysis and Critical Control Points.

CCP3 (P) Metal detection	Metal	The actual metal detector is on and works to detect 2mm ferrous particles and 3mm non-ferrous particles	Curd transported through a metal detector Metal detector detects ferrous and non-ferrous metals*	Visual inspection that the metal detector is turned on and the product is being tested Testing with appropriately sized samples	Both visual inspection and testing are performed at startup, approximately every hour during production, and near the end of the shift	Filling operator	If the detector is not turned on or has not passed the sensitivity test, all product from the last compliance test is held and retested for metal after the aging process The service technician adjusts or otherwise repairs the metal detector to ensure an appropriate level of sensitivity	The Quality Assurance (QA) Manager observes the operator conducting a test once per shift The Quality Assurance (QA) Manager reviews the records daily and certifies them with his initials The Quality Assurance (QA) specialist checks the sensitivity of the detector on a weekly basis by performing a product sample inoculation test Sensor calibration (sensitivity test) monthly and after service	Completed operator log that contains inspection operations to be observed and recorded Deviation reports with product evaluation and distribution results Detector calibration logs

* The sensitivity of the metal detector is set at 2 mm, although the HACCP team has determined that metal particles smaller than 7 mm are not a health hazard. Metal of any size in a product can be identified as an impurity (adulterant; weighting agent).

Critical Control Points (CCP)	Risk(s) to be reflected in the HACCP plan	Critical limits for each control measure	Monitoring				Corrective Action	Verification	Reporting procedure
			What	How	How often	Who			

CCP1 (B) pasteurization	Pathogens such as Salmonella *Salmonella* (destruction)	Product temperature ≥161°F for ≥15 seconds	Milk temperature at the outlet of the tube holder Seal on the flow control pump	Temperature recorder at the end of the tube holder, automatic low temperature diverter valve Visual inspection of the seal	Continuous recording At startup.	Pasteurization operator	Recalibrate and reseal the pump if the seal is broken. Milk will be automatically diverted at low temperature at the end of the tubular holder; milk will be re-pasteurized If the diverter valve fails, the product will be saved and re-pasteurized If thermometer and recorder readings do not agree, thermometers are corrected; product affected is placed on hold for evaluation	The Quality Assurance (QA) specialist checks the piston pump speed daily and makes a corresponding entry in the pasteurization logbook The maintenance technician calibrates the diverter valves and thermometers monthly. The pasteurization operator compares thermometer and recorder readings twice a day The Quality Assurance (QA) Manager reviews the records daily and certifies them with his initials The length and diameter of the tubular holding tank are tested once a year using a salt marker test to verify residence time	Pasteurizer log Pasteurization log Calibration log QA flow verification log (QA flow verification log) Corrective action logs
CCP2 (B) Press (mill	*Staphylococcus aureus (Staphylococcus aureus)*	pH ≤ 5.60 within 8 hours after the start of the cultivation process	pH of the mixture in the vats	pH meter	Before adding salt to each batch	Cheesemaker	Separate the product, re-sample for Staphylococcus aureus after pressing If S. aureus reading ≥ 104, test for staphylococcal enterotoxin; if enterotoxin is present, the product should be destroyed; if enterotoxin is absent, send cheese for heat treatment		

HASSP PLAN FORM
Yogurt

Critical control points (CCPs)	Hazards addressed in the HACCP plan	critical threshold for control measures	Monitoring				Corrective actions	Verification activities	Records management procedures
			What	How	Frequency	Who			
CTC 1 (Biologicals) Heating	Residual pathogens such as Salmonella.	Heating (UHT) temperature: ≧130℃ Timing: 2~3 seconds (NTDV: ≧ 65℃, 30 min) (WTCV: ≧75℃, 15 seconds)	Milk temperature at the end of the pipe	Temperature recorder at the end of the branch pipe	Maintaining records on an ongoing basis	Heating process operator	Calibrate and reseal, if the seal is broken At low temperature, the milk will be automatically diverted for re-pasteurization If the diverter valve malfunctions, the product will be saved and repasteurized If the thermometer and recorder do not match, the thermometer will be corrected and the product subjected to equipment malfunction will be withdrawn for examination.	The quality control department checks the piston pump speed (rpm) daily and records pasteurization data. Maintenance calibration of the diverter valve and thermometers is performed on a monthly basis The pasteurization operator checks the thermometer and recorder twice a day The Quality Assurance Supervisor reviews and signs the records daily. The length and diameter of the spigots are checked once a year with a salt indicator to validate the resistance time.	Pasteurization record Calibration record Quality control maintains a record of verification of the production process Recording of corrective actions
KTC2 (Physical) Metal detection	Metal	Functioning metal detector detecting 1.5 mm ferrous and 3.0 mm non-ferrous metals (stainless steel)	Yogurt passing through metal detector Metal detector detects ferrous and non-ferrous metals	Visual observation of metal detector operation and product passage. Test with appropriately sized test pieces.	Both observation and control tests are performed at startup, approximately every hour during production and near the end of the shift.	Filling process operator	In the event that the detector fails to turn on or there are failures in the sensitivity of the detector, all products from the last proper inspection are removed and re-inspected for metals, after the fermentation process. The maintenance service adjusts or repairs the metal detector to establish the appropriate sensitivity	The quality control supervisor checks operators for control tests once per shift. The quality control supervisor checks and signs the records daily The quality control supervisor verifies the sensitivity of the detector by conducting tests with selected product samples on a weekly basis Detector calibration (sensitivity test) monthly and after maintenance	Operators log book to keep a record of inspections, observations. Deviation report with results of evaluation and product utilization. Detector Calibration Log

Specific instances of non-compliance with HACCP
Significant discrepancies
Incorrect entries.
In case of deviation from the KP, corrective actions have not been carried out or corrective actions have not been carried out properly.
There was no monitoring of the KKT or monitoring of related activities.
Minor non-compliances
The HACCP plan is not in place despite the need.
The HACCP plan is not compliant.
There are no measures to control some/all significant risks.
HACCP records are missing/or inconsistent records.
No action has been taken on the issues in terms of hygiene control and/or there are no records of rectification.
Hygiene control monitoring was not carried out.
Minor non-compliances
There was no review of the records.
Re-validation of the HACCP plan was conducted by an incompetent person
There is no record and/or no date on the HACCP plan
The records do not have the appropriate signatures/dates of who kept the records or the reviewer's notes
The date of the HACCP plan check is inconsistent on o date and year.

5.8. Principle 7. Establish record-keeping procedures

All HACCP procedures must be documented
Documentation and record keeping should be appropriate to the nature and size of the enterprise and sufficient to support CAASP controls
Recommendations developed by experts can be used as part of the documentation provided that they reflect the specific food operations carried out by the establishment. The documents confirm that critical limits have not been breached and that appropriate corrective action has been taken when critical limits are breached.
Documents confirming the application of HACCP principles
Protocols recording the implementation of the preparatory steps and the application of the 7 HACCP principles.
Product Description Protocols.
Protocols for describing raw materials, ingredients and product contact materials.
Block diagram of the production and description of the process stages.
Hazard identification and assessment protocol
Protocol for categorizing management measures
HACCP plan
Critical Limit Validation Protocol
Development of a HACCP plan
The HACCP plan shall be documented and shall include the following information for each critical control points (CTCs);
Factors causing food hazards to be managed in the CTC.
Management measures
Critical limits
Monitoring procedures
Corrections and corrective actions to be taken if critical limits are exceeded
Responsibilities and powers \
Monitoring records.

HACCP Plan Form

Critical Control Points (CCPs)	Risks to be included in the HACCP Plan	Critical limits for each control measure	Monitoring				Corrective actions	Verification actions	Documentation of procedures
			What	How	Frequency	Who			

6. HACCP inspection

6.1. Principles and personal qualities in inspection (audit) based on ISO 9001

-Presumption of good faith of business entities;
- contradictions and ambiguities in the legislation of the Kyrgyz Republic establishing mandatory requirements cannot be used against business entities;
- if a business entity in its activities has applied a rule of law that contradicts another rule of law, its actions are proper and are not considered unlawful;
- non-interference in the activities of business entities;
- legality, objectivity and transparency in the activities of authorized bodies;
- inadmissibility of duplication of departmental and interdepartmental control and supervision during inspections;
- financing of inspections by authorized bodies only from the state budget;
- Establishment of mandatory requirements subject to inspection by laws, resolutions of the Government of the Kyrgyz Republic;
- mandatory informing of business entities by the authorized bodies about normative legal acts of the Kyrgyz Republic establishing mandatory requirements, compliance with which is subject to inspection;
- continuity and promptness of the audit, i.e. full and as fast as possible implementation of the audit within the established timeframe.

6.2. Regulatory requirements for inspection in production Established requirements for food production

Inspection is carried out only on the basis of national legislation and requirements, and EEU norms Prescription of the Ministry of Economic Development and Trade of the Kyrgyz Republic, Order of the Supreme Council of the Ministry of Agriculture of the Kyrgyz Republic, personal ID of the inspector, including HACCP inspection documents (HACCP Plan, Production Check-Lists, Inspector's Check-List, ACP and Prescription of the Supreme Council of the Ministry of Agriculture of the Kyrgyz Republic).

6.3. Procedures and stages of HACCP inspection at production facilities

Production is divided into office, production, and housekeeping parts.
HACCP inspection procedures:
-office -documentary;
-production from clean zone (packing, labeling shop) to dirty zone (production laboratory, milk reception, pasteurization shop, butter shop, cheese shop, etc.);
-territory (hard surface, vehicle washing and hovering, parking, garbage, de-barrier, etc.)

HACCP PLAN CHECKLIST

Item / Activity - Principles		Completed		Date
		Yes	No	
1.	Preliminary tasks are to assess inventory and current operations for food safety requirements.			
1.1	Create a HACCP team that includes a person who has been trained in HACCP.			
1.2	Describe the product, its intended use and/or customer			
1.3	Describe operational production practices - types of pre-production programs.			
1.4	Develop a flow chart including raw material receipt, production process steps, processing equipment, packaging, storage and shipping.			
1.5	Determine compliance with existing regulatory requirements (GMP - Good Manufacturing Practices, USDA HACCP, HACCP for juices, HACCP for seafood, SSOP - Standard Sanitation Procedures, LACF - Low Acidity Canned Foods. Label information on allergens and more).			
1.6	Review and update food safety pre-event program SOPs.			
2.	Risk Analysis and Critical Control Points - Identify and assess potential risks that are likely to occur and determine appropriate preventive controls.			
2.1	Conduct a Risk Analysis			
2.2	Identify control measures including (but not limited to): - Critical Control Points (CCPs) - Other general controls required by the pre-event program (e.g., sanitation program, food allergen program, broken glass elimination/prevention program, supply management, etc.)			
2.3	Consider design changes that will assist in managing / mitigating any potential hazards and reducing risk.			
3.	Critical Limits - Establish critical parameters and limits for each of the KCPs			
3.1	Critical limits have been defined and validated for each of the KKTs.			
3.2	The most commonly used limits are time, temperature, humidity levels, Aw (water ativity), pH, and visual determinables (e.g., proper labeling of allergens)			
4.	Monitoring - Develop a monitoring system for each of the KCPs			
4.1	Identify and prescribe appropriate monitoring activities (including their frequency) associated with preventive controls to ensure that identified risks are significantly minimized or completely eliminated.			
5.	Corrective Actions - Establish procedures for corrective actions to be taken in the event of improper implementation, control, non-compliance or inefficiency of the TSC.			
5.1	Identify the corrective action procedures to be taken if the TSC is implemented incorrectly or found to be ineffective.			
5.2	Establish procedures for documenting corrective actions (e.g., corrective action completion form)			
5.3	Establish procedures for taking appropriate action to reduce the likelihood of recurrence of deviations.			
5.4	Develop procedures to identify all affected products to ensure safety and prevent them from entering the market if their food safety cannot be guaranteed.			
5.5	Develop a plan to recall and withdraw products from the market.			
6.	Verification and Validation - Establish procedures to verify that preventive controls are effective and that the HACCP plan is working properly.			
6.1	As appropriate, establish scientific or other justification that measures to control risks effectively prevent, eliminate or reduce them to a level that ensures food security.			
6.2	Perform an initial audit to verify that the HACCP Plan is properly developed and risks are effectively controlled.			
6.3	Establish a documented periodic reevaluation of the plan to ensure its relevance when (1) significant changes occur that may adversely affect food safety, or (2) each year, whichever comes first.			
6.4	Establish programs to monitor external conditions and test products as verification as needed.			
7.	Documentation - Establish effective record keeping procedures that document the HACCP Plan			
7.1	Identify record keeping requirements (BT Act, HACCP, LACF, etc.).			
7.2	Determine methods for maintaining and storing key HACCP plan records, and decide where and how long the records will be stored (e.g., in the company office or at a specific site); ensure access to them.			
8.	Training - Create effective training programs for managers and line workers.			
8.1	Provide training to managers and employees who will develop and oversee the HACCP plan			
8.2	Establish a training/education program for operators who will implement the HACCP Plan			
8.3	Training on documentation and evaluation of its effectiveness has been conducted.			

Need for follow-up:

Description	Describe the corrective actions	Responsible person for follow-up?	When to implement corrective actions?	Completed (Date)

References:

FDA website:
http://http://www.fda.govlFood/GuidanceRegulation/HACCP/.fda.govlFood/GuidanceRegulation/HACCP/
USDA Web site: http://fsrio.nal.usda.gov/haccp/meat-and-poultry-haccp
Codex:
http://http://www.fao.org/docrep/005/Y1579E/y1579e03.htm.fao.org/docrep/005/Y1579E/y1579e03.htm
Basic texts of the Food Hygiene Code -FAOIWHO 2004 and Annex to CACIRCP 1-1969, Version. 4 (2003)
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6.3.1 Hygienic control in dairy farms

(1). Hygiene management around the barn

Around the barn is essential:

1) Livestock housing
2) Processing room
3)Breeding management
4)Milking hygiene
5)Breeding, fertilizer management
6)Materials and dynamics management
7)Manure, waste management

(2). Tribal management is necessary:

1) Hygienic management of livestock
2) Milking hygiene management
3) Hygienic handling of feed and fertilizers
4) Hygienic handling of materials and veterinary medicines
5) Sanitary manure and waste management

Dairy farm hygiene management checklist

Address	
owner's name	
Tel	
Inspection points	I Facilities management ⑴ Hygiene management around the barn of dairy cattle ⑵ Dairy barn hygiene management ⑶ Sanitary and hygienic maintenance of the raw milk processing plant II Feeding management

	⑴ Hygienic maintenance of dairy cattle ⑵ Milking hygiene management ⑶ Hygienic handling of feed and fertilizers ⑷ Hygienic handling of materials and veterinary medicines ⑸ Hygienic manure and waste management
Date of inspection	
Inspector	

Всесторонняя оценка

«Вот результаты вашего состояния управления гигиеной на ферме:
Стандартный балл оценки будет представлять собой общий балл применимых пунктов. Инспектор записывает баллы и скорость приобретения для каждого применимого предмета».

Пункты проверки	Контрольная точка оценки	Стандартный балл оценки	Заработанные баллы	Коэффициент приобретения(%)
1 Управление объектами	(1) Управление гигиеной вокруг молочного коровника	18		
	(2) Санитарно-гигиеническое обслуживание животноводческих помещ	36		
	(3) Гигиенический контроль цеха переработки сырого молока	20		
	Промежуточный итог	74		
II Управление разведением	(1) Гигиеническое управление животноводством	34		
	(2) Гигиеническое управление доением	34		
	(3) Гигиеническое управление кормами и удобрениями	26		
	(4) Гигиеническое обращение с материалами и ветеринарными препаратами	16		
	(5) Гигиеническое обращение с навозом и отходами	16		
	Промежуточный итог	126		
	Итого	200		

Критерии	
Уровень приобретения 90% или более:	Внедрение очень хорошего управления гигиеной
Коэффициент приобретения: 70-89%:	В целом хорошее управление гигиеной
Коэффициент приобретения: 50-69%:	Некоторое управление гигиеной нуждается в улучшении
Коэффициент приобретения 49% или менее:	Необходимо пересмотреть общее управление гигиеной
Комментарии инспекторов:	

I Facilities management

(1) (1) Hygiene management around the dairy barn

"Inspection Points."

①	
2 points	On the farm, entry and exit of vehicles and unauthorized persons shall be restricted by gates, signs, etc., and the access path shall be limited.
1 point	Access to the farm is limited (no gates, signage, etc.).
-1 point	There are no restrictions on the entry and exit of vehicles and people on the farm.

②	
2 points	Decontamination points and soda lime decontamination areas may not be organized on a regular basis (when infectious diseases occur on nearby farms, etc.) Or the vehicle is not disinfected on a regular basis.
-1 point	Disinfectants are not installed or vehicles are not disinfected.

③	
2 points	The road surface around the barn is paved or maintained in good condition and free of bumps, puddles and muddy water.
1 point	Mostly maintained but there are bumps, puddles and muddy areas.
0 points	Failure to comply.

④	
2 points	Weed control around the barn is carried out regularly, weeds do not grow.

1 point	Weed control is underway, but part of the area around the barn is overgrown.
0 points	No weed control (overgrown with weeds).

⑤	
2 points	There are no items, trash or debris left around the barn.
1 point	Items, trash and debris remain in a portion of the area around the barn.
0 points	A lot of stuff, trash and debris is left around the barn.

⑥	
2 points	The area around the barn is landscaped and efforts are being made to beautify the environment by installing flowerbeds.
1 point	We are trying to beautify the environment around the barn, but it's not enough.
0 points	The area around the barn is not landscaped.

⑦	
2 points	All farm labor equipment is stored in a covered storage area.
1 point	There is a covered storage area, but some farm equipment is left outdoors.

⑧	
2 points	The pen is kept in proper condition (no accumulation of manure, dirt, etc.).
1 point	The paddock is in good condition, but partially in poor condition (some areas show accumulations of manure, dirt, etc.).
0 points	The paddock is not maintained (significant manure accumulation, siltation, etc.).
	* Objects without a corral are excluded from scoring.

⑨	
2 points	Wastewater treatment is performed at facilities to prevent contamination of groundwater and river runoff.
1 point	Drainage facility is present, treated, but some wastewater flows onto the site (incomplete treatment).
-1 point	There is no drainage system and there is groundwater contamination or river runoff.

(2) Sanitary and hygienic maintenance of dairy cattle barns

"Inspection Points."

①	
2 points	Only those who work there are allowed in and out of the barn.
1 point	Entry to the barn is restricted (human access is not restricted).
-1 point	There are no restrictions on people entering or leaving the barn.

②	
2 points	Offensive sanitizing receptacles and hand sanitizers are installed at entrances, etc., and are properly managed.
1 point	Some of the above decontamination equipment (stage decontamination tank only, etc.) has been installed.
-1 point	No disinfection equipment has been installed.

③	
2 points	If work clothes become soiled, replace immediately (at least once a day).
0 points	The same work clothes are worn for 2-3 days, even if they get a little dirty.
-1 point	Work clothes don't change for a while, even if they get very dirty.

④	
2 points	If there is serious damage such as a crack in a breeding tank or aquarium, window damage, or a leak in the ceiling, it is repairable immediately.
0 points	Even if there is damage, repairs will be made after some time.
-1 point	Even if there is damage to the barn, no repairs are made.

⑤	
2 points	The barn is always tidy, there are no items other than those used in work (no unnecessary items).
1 point	The barn is relatively tidy, but some unnecessary items are present.
0 points	The barn is a mess.

⑥	
2 points	The cowshed is cleaned every day, always clean.
1 point	The barn is cleaned from time to time.
-1 point	The cowshed is rarely cleaned.

⑦	
2 points	The barn is disinfected once every two weeks or regularly applied with milk of lime once or twice a year.
1 point	The barn is disinfected irregularly, once every few years.
-1 point	The barn is not disinfected.

⑧	
2 points	Measures are taken to prevent dogs and cats from entering (installation of mesh doors at the point of entry)
0 points	No measures are taken to prevent dog and cat intrusion, or dogs and cats live in the barn.

⑨	
2 points	Measures are taken to prevent the entry of wild animals such as mice and wild birds (installing mesh doors at entry points, etc.).
-1 point	Measures to prevent the entry of wild animals such as rats and wild birds are not taken. In addition, rats, wild birds, etc.

	often enter and leave the barn.

⑩	
2 points	Screen doors, etc. are installed to prevent pest invasion.
-1 point	No pest prevention measures were taken.

⑪	
2 points	Sanitary pests are routinely eliminated by spraying chemicals, germicidal lamps, fly tape, etc.
-1 point	Sanitary pests are not eradicated.

⑫	
2 points	There are records and they are kept for a period of time.
1 point	Drug invoices and invoices from the contractor are saved and it is possible to trace the record.
0 points	There are no records, can't be traced even if necessary.

⑬	
2 points	Adequate ventilation in the barn is provided by fans, opening and closing windows, etc., and a thermo-hygrometer is installed for proper temperature and humidity control.
1 point	Ventilation of the barn is sufficient, temperature/humidity sensor is installed, but these parameters are not controlled.
0 points	Inadequate ventilation in the barn and lack of installation and control of temperature/humidity meters (poor ventilation and poor temperature/humidity control)

⑭	
2 points	The aisles are well cleaned and dried.
1 point	Aisles are cleared but not dry enough.
-1 point	The aisles are filthy.

⑮	
2 points	Wild animals such as livestock, rats and wild birds sometimes contaminate the feed, but this is eliminated by cleaning the feeder immediately.
0 points	The feed may contain excrement from wildlife such as livestock, mice and wild birds, but the feeder should be cleaned immediately.
-1 point	The feeder is not cleaned. It is left unattended, even if wildlife excrement such as livestock, mice and wild birds have gotten there.
⑯	
2 points	The impact of wildlife such as livestock, mice and wild birds is controlled by thoroughly cleaning the feeder and water tank. No excrement, etc.
0 points	The water tank is dirty or slimy with excrement from wild animals such as livestock, mice and wild birds. Any dirt trapped must be cleaned out immediately.
-1 point	The water tank is not cleaned. Wildlife, mice and bird excrement, dirt, slime are present.

⑰	
2 points	Regular water quality tests (color, odor, bacteria, etc.) are conducted to confirm the absence of contamination and are recorded.
1 point	Water quality tests have been conducted in the past to confirm there is no contamination, but no records are kept.
0 points	No water quality testing was performed.
	* Farms that do not use groundwater or spring water (using tap water) are excluded from scoring.

⑱	
2 points	Measures to prevent cattle slipping accidents, such as slip preventers, are properly implemented.
1 point	Although measures are taken to prevent cattle from slipping, such as anti-slip agents, this is not sufficient because of the damage.
0 points	No measures have been taken to prevent livestock from slipping.

(3) Hygiene management of the raw milk processing plant

"Points to check."

①	
2 points	The processing hall and the barn are completely separated by partitions, doors, etc.
1 point	There are partitions, doors, etc., but they can be open.
0 points	No partitions, doors, or the processing room and barn are not separated.

②	
2 points	The entrance to the treatment room is always closed.
1 point	Sometimes the entrance to the processing room is open.
0 points	The entrance to the processing room is always open.

③	
2 points	A disinfectant tank is installed at the inlet and outlet of the treatment plant, and the disinfectant used and the number of sanitizer changes are appropriate.
1 point	A disinfectant tank is installed at the entrance and exit of the processing shop, but the disinfectant used and the number of replacements are not consistent.
-1 point	There is no disinfection tank installed at the inlet/outlet of the processing plant.

④

2 points	The processing shop is always cleaned and kept clean every day.
1 point	The processing shop is cleaned as contamination occurs, but cleaning conditions are inadequate.
-1 point	The shop is not being cleaned.
⑤	
2 points	A hand sanitizer tank or hand washing area is in place, hand sanitizer or soap is being processed.
0 points	There is a hand washing area, but only water washing.
-1 point	Hands and fingers are not sanitized with disinfectants or soap.

⑥	
2 points	The treatment room is always tidy and there are no unnecessary items.
1 point	The processing room is relatively clean, but there are unnecessary items.
0 points	The treatment room is filthy.

⑦	
2 points	The treatment room is sufficiently ventilated with a fan, etc. and there is no accumulation of moisture, odor, etc.
1 point	The treatment room is ventilated with an exhaust fan, etc., but humidity and odor persist.
0 points	The treatment room is not ventilated with a fan, etc., moisture and odor persist.

⑧	
2 points	The treatment room floor is well drained and there are no congestion points.
1 point	There is a part of the floor with poor drainage, water stagnates a bit.
0 points	The floor is poorly dried and the drains stagnate badly.

⑨	
2 points	The milking system and filling tank are well cleaned and hygienic.
1 point	The milking system and the fill tank are hygienic but cleaning is insufficient.
0 points	Milking system, filling tanks are unhygienic (not cleaned).

⑩	
2 points	The milking system and filling tank are regularly checked by specialists (contractors) at least once a year.
1 point	Milking systems and filling tanks have been checked by experts (suppliers) in the past. Or it has been done independently.
0 points	The milking system and filling tank are not inspected.

II Feed management

(1) Hygienic maintenance of cattle

"Points to check."

①	
2 points	We observe the health of cattle on a daily basis, such as healthy appetite and feces.
1 point	We don't always monitor cattle health conditions such as healthy appetite and feces.
-1 point	We do not observe cattle health conditions such as healthy appetite and feces.

②	
2 points	Cows with suspected disease are isolated, treated early and counseled.
0 points	Cows with suspected disease are observed and treated by a veterinarian as needed.
-1 point	Cows with suspected disease are left unattended.

③	
2 points	Personalized identification ear tags are quickly attached and communicated.
1 point	From time to time, the wearing and reporting of individual identification ear tags may be delayed.
-1 point	Individual identification ear tag not attached.

④	
2 points	Introductions, insemination, delivery date, treatment history, etc. are recorded in the lactation management logbook and kept.
1 point	Introductions, insemination, date of delivery, treatment history, etc. are sometimes recorded in a lactation management logbook and kept.
-1 point	Introductions, insemination, delivery date, treatment history, etc. are not recorded in the feeding management record book.

⑤	
2 points	Breeding densities are established and breeding is done appropriately within this range.
1 point	Although breeding densities are established, sometimes they may not be strictly adhered to.
-1 point	The breeding density is not fixed and is always rigidly adhered to.

⑥	
2 points	The cow is inspected every day and if it is dirty, the dirt must be removed constantly so that the cow is always clean.
1 point	Periodically the cow is checked, if it is very dirty, it is washed.
-1 point	The cow is rarely inspected, even if it is very dirty, it is not washed.

⑦	
2 points	The hooves are trimmed regularly.
0 points	The hooves are not trimmed on a regular basis.

⑧	
2 points	Cows are sheared and dried regularly.
0 points	Cows are not sheared or dried regularly.

⑨	
2 points	Clean and dry
1 point	Sometimes cleaning is not done, there are areas that are dirty or not dry
-1 point	A little cleaning, dirty and not dry.

⑩	
2 points	Bedding is changed regularly and in sufficient quantity.
1 point	The bedding is not changed regularly and may be a little short.
-1 point	The bedding is almost never changed, it's short.

⑪	
2 points	The program is set up as needed, vaccinations are administered.
1 point	There is no program, but vaccinations are being administered.
0 points	No vaccinations are administered.

⑫	
2 points	Information on treatment history of introduced cattle, hygiene status of the introduction source, etc. is obtained for each introduction.
1 point	Information such as the treatment history of the introduced cow and the hygiene management status of the introduced source may not be available.
-1 point	We did not obtain information on the treatment history of introduced cattle and the hygiene status of the introduced source.

⑬	
2 points	Intradosed cattle are kept in an isolated barn for a period of time and their health is monitored to ensure there are no abnormalities.
1 point	Introduced cattle are sometimes not quarantined or are quarantined in the same barn.
-1 point	Intradosed cattle are not quarantined.

⑭	
2 points	The health status of the cows to be shipped is necessarily checked (calves, etc.).
1 point	The cows (male calves, etc.) that are sent out are checked for health from time to time.
-1 point	The health status of the cows (male calves, etc.) being shipped is not checked.

⑮	
2 points	Fallen cows are immediately examined by a veterinarian and his instructions are followed.
0 points	Fallen cows are sometimes examined by a veterinarian, his instructions are not always followed.
-1 point	Fallen cows are not examined by a veterinarian.
⑯	
2 points	The place where the fallen cows are taken out and the machines used are disinfected every time they are taken out.
1 point	The place from where the fallen cows are removed and the machine used are not disinfected every time.
0 points	The place of removal of fallen cows and the machines used are not disinfected.

⑰	
2 points	I get information through vets, magazines, flyers, internet, seminars, etc.
1 point	I only get information by listening to other people.
-1 point	Not getting the information in any way.

(2) Milking hygiene management
"Points to check."

①	
2 points	The milking system is checked every day.
1 point	The milking system is checked periodically.
0 points	The milking system is not inspected.

②	
2 points	Correctly set up according to the disinfectant manufacturer's standards.
-1 point	The customization is not up to standard.

③	
2 points	The dip tank is rinsed every day and the liquid is always changed.
1 point	The dip vessel is not washed, only the liquid is changed.
0 points	The dip tank is not rinsed, the liquid is not changed every day.

④	
2 points	Pre-squeezing is done 5 times for each nipple.
1 point	Pre-draining is done 1 time for each nipple.
0 points	Pre-surrendering is not done all the time.
-1 point	No pre-moistening is done.

⑤	
2 points	A mug is obligatory for the first trickle of milk.
1 point	A mug for drinking the first trickle of milk is not always used

0 points	A mug for drinking the first trickle of milk is not used

⑥	
2 points	Teat cleaning is done with an individual wipe for each cow.
-1 point	Teat cleaning is not done with an individual wipe for each cow

⑦	
2 points	Dries with a paper towel or something identical.
0 points	It's not drying in any way.

⑧	
2 points	The milking cup is attached 1 minute to one minute 30 seconds after pre-squeezing, and milking is completed in 5-6 minutes.
1 point	There is a slight difference in milking cup and milking time after pre-squeezing.
0 points	There is a big difference in milking cup and milking time after pre-milking.

⑨	
2 points	Dipping is done immediately after finishing milking.
-1 point	No diving is done at all.

⑩	
2 points	Recommendations for the operating temperature of cleaning and disinfecting agents are as follows: • Rinse immediately after milking: 38-43 degrees Celsius • Alkaline circulation cleaning: 70 degrees or more at the beginning, 38-43 degrees at the end • Acid circulation cleaning: 70 degrees or more at the beginning, 38-43 degrees at the end • Acid rinse: 38-43 degrees. • After rinsing: normal temperature up to 43 degrees Celsius
-1 point	Cleaning and disinfection: the temperature of each cleaning process is not respected.

⑪	
2 points	We fully understand the purpose of using alkaline and acidic detergents and properly clean the milking system.
-1 point	The purpose of the use is not fully understood and is not properly executed.

⑫	
2 points	A PL tester is always used and if any abnormalities are found, medical attention should be sought from a veterinarian.
1 point	A PL tester is always used, but referral to a veterinarian should not be made even if any abnormalities are detected.
-1 point	The PL tester is not used, referral to a veterinarian for medical attention should not be made.

⑬	
2 points	Cows treated are identified and recorded by labeling.
1 point	A treated cow is identified only by identification such as labeling or recording.
-1 point	The treated cow is not identified.

⑭	
2 points	Simple boards etc. have been installed in the barn to provide communication and control.
1 point	We only keep in touch and make decisions verbally.
-1 point	No contact with employees.

⑮	
2 points	All raw milk from treated cows is disposed of properly.
-1 point	Used for feeding lactating cows without culling.

⑯	
2 points	After the dispatch restriction period has expired, a check is always performed before dispatch.
1 point	After the dispatch restriction period has expired, only the treating department's verification is performed and other departments do not perform verification.
-1 point	Only rest from medication is observed and no testing is done.

⑰	
2 points	Milk temperature is always recorded after milking and during shipment.
1 point	The milk temperature is always recorded at the time of shipment.
-1 point	Intermittently recorded or not performed at all.

(3) Hygienic management of feed and fertilizers

①	
2 points	Purchased from a reputable supplier, such as a licensed supplier, and guaranteed as to ingredient content.
1 point	We don't have a verified permit, but we use a vendor that also works with neighboring farms.
0 points	The supplier is not paying proper attention.

②	
2 points	There is a receipt/payment ledger and all items are recorded.
1 point	There is no receipt/payment ledger, but invoices are kept.
-1 point	There is no receipt/payment ledger and invoices are not kept.

③	
2 points	Ingredient content is checked each time the product is received.
1 point	At the time of delivery, ingredient contents are confirmed for some items.
0 points	The contents of the ingredients are not confirmed at the time of delivery.

④	
2 points	No free samples are used whose ingredients cannot be documented. Ingredients are documented.
1 point	Free samples from trusted suppliers are utilized by verbally confirming the ingredients.
-1 point	Free samples are used without confirmation of ingredients.

⑤	
2 points	Based on the ministerial regulation on the standards of feed ingredients and feed additives, the required items are recorded and kept in the ledger after the feed is used.
1 point	It is possible to trace records back to invoices.
-1 point	There are no records and they can't be tracked even if necessary.

⑥	
2 points	Good organization of subjects.
1 point	Not all items are organized.
0 points	There's no order.

⑦	
2 points	The feed is used in the correct order on a first-come-first-served basis.
1 point	Some feeds are used on a first-come-first-served basis.
0 points	Due attention is not paid to the manner in which feed is utilized.

⑧	
2 points	The feed warehouse is clean and disinfected and free of mold.
1 point	The feed warehouse is not always cleaned and disinfected.
0 points	The feed warehouse is not cleaned and disinfected.

⑨	
2 points	The feed tank and storage area are undamaged and kept dry.
1 point	The feed tank is partially damaged.
0 points	There are damaged parts in the tank, there is a risk of rainwater ingress.

⑩	
2 points	Prevent animals from entering the feed storage area.
1 point	Partial measures are taken to prevent animals from entering the feed stores.
-1 point	Preventing animals from entering the feed storage area is not done.

⑪	
2 points	We regularly exterminate rats, wild birds, etc. in feed stores.
1 point	Extermination of rats, wild birds, etc. at the feed store is carried out irregularly.
-1 point	No extermination of rats, wild birds, etc. was carried out in the feed store.

⑫	
2 points	Feed is stored separately from other materials.
1 point	The feed is partially stored indoors with other materials, but everything is neat.
0 points	Feed is stored in the same room with other materials, clutter.

⑬	
2 points	Entry and exit of vehicles are identified and sanitized on a mandatory basis.
1 point	Disinfection is possible and is done from time to time.
-1 point	No action has been taken on the vehicles.

(4) Hygienic handling of materials and veterinary medicines

"Points to check."

①	
2 points	Purchased from a licensed supplier with proven shelf life, quality and ingredients.
0 points	No due consideration is given to the vendor.

②	
2 points	For pesticides, receipt and payment records are recorded for all items.
1 point	There is no record book for pesticides, invoices are kept.
0 points	There are no records or invoices for pesticides.

③	
2 points	Storage of materials is organized for each item.
1 point	Some items in the materials warehouse are not organized.
0 points	The warehouse is a mess.

④	
2 points	Prevent animals from entering the material storage area.

0 points	No measures have been taken to prevent animals from entering the materials warehouse.

⑤	
2 points	For disinfectants and cleaning supplies, records of receipt and payment are recorded for all items.
1 point	No record book is kept for disinfectants and cleaning agents, only bills of lading.
0 points	No records or invoices are kept for disinfectants and cleaners.

⑥	
2 points	Disinfectants are stored in a cool and dark place.
0 points	Storage space for disinfectants is not given adequate attention.

⑦	
2 points	Preparations are kept in order and stored in a cool and dark place.
1 point	Animal medications are kept in order and stored at room temperature.
0 points	The place of storage of veterinary medicines is not identified and organized.

⑧	
2 points	Necessary questions regarding the use of medicines based on the Ministerial Decree on the Regulation of the Use of Veterinary Medicines (date of use, individual number, etc.) are recorded and kept in books.
1 point	Veterinarian's instructions are stored, records can be tracked.
-1 point	There are no records, impossible to trace even if necessary.

(5) Sanitary manure and waste management

"Inspection Points."

①	
2 points	There are prerequisites for manure management.
-1 point	There are no necessary manure management conditions.

②	
2 points	To prevent splashing or leaking of the substance solidified by adsorption of manure on bedding, etc., it is made of waterproof materials such as concrete and provided with side walls. Alternatively, as a simple method, the top and bottom are covered with a waterproof film.
0 points	Some items are inconsistent (e.g., concrete structure but no side walls).
-1 point	Excrement is left as is, splattered or accumulated outdoors.

③	
2 points	As for liquid substances such as urine and sludge, storage tanks should be made of concrete, watertight sheets, steel sheets, etc. to prevent wastewater from entering the ground.
0 points	The storage tank is installed but not made of impermeable materials (concrete, watertight sheeting, steel sheeting, etc.).
-1 point	It's left as is, with feces.

④	
2 points	Fairly fermentable through reduction and the use of a fermentation gas pedal.
1 point	Partial fermentation.
0 points	Not fermented.

⑤	
2 points	Regularly check for cracks and tearing of the film.
1 point	Checked periodically.
0 points	It never checks out.

⑥	
2 points	If cracks or tears in the film are confirmed, they will be promptly repaired.
0 points	Even if confirmed, not eliminated.

⑦	
2 points	The annual amount of livestock excreta, treatment method and amount by treatment method are recorded.
1 point	Not everything is written down, but some items are.
-1 point	No records are kept.

⑧	
2 points	Request for disposal to an industrial waste recycling company.
-1 point	Not handled by an industrial waste recycling company.

- *2 Likely risks on the dairy farm and how to deal with them*

- animal health, use of veterinary medicines

-Wealth of the territory in terms of especially dangerous animal diseases (timely scheduled preventive measures)

-feeding (feed test protocols)
-maintenance (hygiene requirements cleaning of the room, manure)
-Milking hygiene (according to the Instruction on personal hygiene, utensils, equipment)

- *Standards for Japanese hygiene control in a dairy farm. Standards of hygienic control of fattening of a dairy farm*

Strict requirements

The use of antibiotics is authorized only for the treatment of bovine mastitis and trauma. Even after administration, it is stipulated that "the period during which the antibiotic remains in the milk after the ingestion or administration of a drug affecting milk, it must not be sent".

Raw milk is tested twice: when it is shipped from the dairy farm and when it is received at the plant. If antibiotics are detected, all raw milk collected is discarded. Only milk that has been thoroughly tested is accepted as raw milk in the factory tanks.

- All dairy farms in Japan who are going to implement HACCP must comply with the items on the sanitation checklist.
- If a dairy farm has passed all items on the checklist, it is ready for HACCP certification.

HACCP Farms Japan

Control according to SanPin Control according to HACCP

Dairy Farm

Disinfecting, daily monitoring, recording and accounting for chemicals, chemical application records, disposal of milk when chemicals are received, milking, shipping clean milk, storage in milk refrigerated tanks, recording and accounting for feed, cleaning and disinfecting barns.

III Comprehensive discussion										
The results of your farm hygiene inspection are as follows:										
Obtaining scores according to the assessment standard										
(1) Hygiene management around the barn 18%										
(2) Sanitary and hygienic maintenance of livestock facilities 36%										
(3) Raw milk processing plant hygiene management 20%										
(Subtotal) 74%										
2 Breeding management (1) Hygienic management of livestock 34%										
(2) Milking hygiene management 34%										
(3) Hygienic handling of feed and fertilizers 26%										
(4) Hygienic handling of materials and veterinary medicines 16%										
(5) Sanitary manure and waste management 16%										
(Subtotal) 126%										
200%										
[Criterion]										
Acquisition rate of 90% or more: we do very good hygiene management.										
Acquisition rate 70-89%: generally good hygiene management is in place.										
Acquisition rate 50-69%: hygiene management needs to be improved.										
Acquisition rate 49% or less: all hygiene management needs to be reviewed.										
{Inspector's comment}										
Inspection points										
General										
1 Facilities management										
"Standard Evaluation Score" is the total score for the applicable items, so the inspector must score the applicable items.										
Please enter again.										
Radar diagram										
0										
20										

40												
60												
80												
100												
Around the barn												
Livestock housing												
Processing room												
Breeding management												
Milking hygiene												
Breeding, fertilizer management												
Materials and dynamics management												
Manure, waste management												

Example of control records for oil production

1. Planning and record keeping for the implementation of the General Hygiene Directorate (GHD)
2. HACCP plan

1. Planning and record keeping for the implementation of the General Hygiene Directorate (GHD)

a. Maintenance and management of facilities, equipment and devices
b. Calibration and accuracy of measuring instruments
c. Temperature control of rooms and equipment
d. Raw materials, products, etc.
e. Employee hygiene
f. Hygiene training for catering workers

6.4. HACCP at the milk collection point (EEU Decision No. 94

Principles of primary milk processing The milk supplied to the consumer must not contain contaminants that pose a threat to human health.

Because of the significant impact of the first stages of dairy product production on the safety of dairy products, potential microbiological contamination from all sources must be minimized to the limit.

In order to have assurance of proper health status of dairy animals, it is necessary to take care of them and use appropriate animal husbandry practices.

Poor housing conditions, inadequate or poor feeding of animals, deficiencies in veterinary care, poor hygiene of milkmaids and the equipment they use, and inappropriate milking methods can all contribute to food contamination by chemical residues and other contaminants at the first stages of dairy production.

Contamination of milk by biological and chemical agents originating from animals and the environment should be minimized at the initial stages of production (a contaminant is any biological or chemical agent, foreign body or any other substance inadvertently introduced into a food product that may compromise its safety or suitability).

The content of contaminant microorganisms in milk should be kept as low as possible by using quality milk production methods and taking into account the technological requirements for its subsequent processing.

In order to improve safety at the initial stages of production, measures should be taken to reduce the initial concentration of contaminant microorganisms in milk, including pathogenic microorganisms and microorganisms affecting the safety and suitability of food products, to an acceptable level.

To guarantee the safety and suitability of the product, it is advisable to use a milk preparation technology that allows the use of less stringent microbiological control measures than other technologies in use.

Milk collection point inspection checklist

Address and name of the milk collection point	
Phone number	
Points to be inspected	1 Area of milk collection point (1) Sanitary control of the outdoor area of the milk collection point (2) Sanitary and hygienic control of the milk collection point. (3) Sanitary and hygienic control of the checkpoint (4) Sanitary control of raw milk analysis preparations and equipment.
Date of inspection	
Inspector	

Comprehensive assessment

Evaluation of sanitation and hygiene control of milk collection point:

The final score is made up of the points in each section. The inspector records the scores and the compliance factor for each item

Inspection points	Indicators	Points	Compliance coefficient in points	Compliance rate in %
1 Territory	(1) Sanitary and hygienic control of the outside area of the milk collection point	16		%
	(2) Sanitary and hygienic control of the milk collection point.	30		%
	(3) Sanitary and hygienic control of the checkpoint	20		%
	(4) Sanitary control of raw milk analysis preparations and equipment.	16		%
Total		82		%

Criteria

Compliance rate of 80% or more: High level of sanitary-hygienic control
Compliance rate: 60-79%: Generally good
Compliance rate: 40-59%: partially improve sanitation and hygiene control
Acquisition rate 39% or less: sanitary hygienic control from start to finish is required

Inspectors' comments:

1. Object management

(2) Sanitary and hygienic control of the outdoor area of the milk collection point.

"Inspection Points."

①	
2 points	At the milk collection point, entry and exit of vehicles and unauthorized persons shall be restricted by gates, signs, etc., and the path of approach shall be limited.
1 point	Access to the milk collection center area is not restricted (no gates, signs, etc.).
-1 point	There are no restrictions on the entry and exit of vehicles and people to the milk collection point.

②	
2 points	Decontamination points and soda lime decontamination areas are organized on an irregular basis (when infectious diseases occur at a nearby milk collection point, etc.) or the vehicle is disinfected irregularly.
-1 point	No disinfection equipment installed, no vehicles disinfected.

③	
2 points	The road surface around the milk collection center is paved or maintained in good condition and free of bumps, puddles, and muddy water.
1 point	The pavement is mostly well maintained, but there are bumps, puddles, and scattered areas.
0 points	Road pavement without maintenance.

④	
2 points	Weed control around the milk collection center is done regularly and there is no overgrowth of weeds.
1 point	Weeds are being controlled, but part of the area around the milk collection center is overgrown with weeds.
0 points	There is no weed control (weeds are overgrown).

⑤	
2 points	There are no foreign objects, trash or debris around the milk collection point.
1 point	Items, trash and debris are present in part of the area around the milk collection point.
0 points	A lot of foreign objects, garbage and waste are present around the milk collection point.

⑥	
2 points	The area around the milk collection point is landscaped and efforts are being made to beautify the area by installing flowerbeds.
1 point	We are trying to beautify the area around the milk collection point, but it is not enough.
0 points	The area around the milk collection point is not landscaped.

⑦	
2 points	All farm labor equipment is stored in a covered warehouse
1 point	There is a covered storage area, some of the C&D is not stored in it and is left outdoors.

⑧	
2 points	Wastewater treatment is carried out at facilities that prevent pollution of groundwater and river flows

1 point	Sewerage facility is in place and treated, but some wastewater flows onto the site (treatment is incomplete)
-1 point	There is no drainage system and there is groundwater pollution or runoff into the river

(2) Sanitary and hygienic control at the raw milk collection point.

"Inspection Points."

①	
2 points	Only those who work there are allowed in and out of the milk collection point
1 point	Entrance to the milk collection point is restricted (passage of people is not restricted)
-1 point	There are no restrictions on people entering or leaving the milk collection center

②	
2 points	Offensive sanitizing receptacles and hand sanitizers are installed at entrances, etc., and are properly managed
1 point	Some of the above decontamination equipment is present (offensive decontamination tanks only, etc.)
-1 point	No disinfection equipment installed

③	
2 points	If clothes get dirty, they will be replaced immediately with new work clothes (at least 1 set per day)
0 points	The same work clothes are used for 2-3 days, even when they get a little dirty
-1 point	The same work clothes are worn for a while, even if they are badly soiled

④	
2 points	If there is serious damage, such as window damage or a leak in the ceiling, it is immediately repairable
0 points	If there is damage, it will be repaired after some time
-1 point	If there is damage, it will be left unrepaired

⑤	
2 points	The milk collection point is always tidy and free of any unnecessary items other than those used in the operation
1 point	The milk collection point is relatively tidy, but some unnecessary items are present
0 points	There is no order at the milk collection point

⑥	
2 points	The milk collection point is cleaned daily
1 point	The milk collection point is periodically cleaned
-1 point	The milk collection point is rarely cleaned

⑦	
2 points	The milk collection point is regularly disinfected, once or twice a year
1 point	The milk collection point is disinfected irregularly, once every few years
-1 point	There is no disinfection at the milk collection point

⑧	
2 points	Measures are taken to prevent dogs and cats from entering (installation of netting in places of entry)
0 points	No measures are taken to prevent dogs and cats from entering, or dogs and cats are kept at the milk collection point

⑨	
2 points	Measures are taken to prevent the entry of wild animals such as mice and wild birds (installing nets at entry points, etc.)
-1 point	Measures to prevent the entry of wild animals such as mice and wild birds are not taken Alternatively, rats and mice, wild birds, etc. are often seen entering and leaving the milk collection center

⑩	
2 points	Mosquito nets, etc. are installed to prevent the invasion of sanitary pests
-1 point	No measures to prevent sanitary pests have been taken

⑪	
2 points	Sanitary pests are routinely eliminated by spraying chemicals, germicidal lights, fly tape, etc.
-1 point	Sanitary pests are not eradicated

⑫	
2 points	There are records of disinfection and they are kept for a period of time
1 point	Records are retained and traceable, but not sufficiently so
0 points	There are no records and they cannot be traced even if necessary
⑬	
2 points	Adequate ventilation is provided by fans in the milk collection point, opening and closing of windows, etc., and a thermo-hygrometer is installed for proper temperature and humidity control
1 point	Ventilation is adequate, temperature/humidity meter installed and not monitored
0 points	Inadequate ventilation at the milk collection point and lack of installation and control of temperature/humidity meters (poor ventilation and poor temperature/humidity control is evident)

⑭	
2 points	The aisle is well cleaned and dried
1 point	Aisle cleaned but insufficiently or poorly dried
-1 point	The aisle is not cleared

⑮	
2 points	Regular water quality tests (color, odor, bacterial tests, etc.) are conducted to confirm the absence of contamination and are recorded
1 point	Water quality tests have been conducted in the past to confirm there is no contamination, but no records are kept
0 points	No water quality testing has been carried out

(3) Sanitary and hygienic control of the checkpoint.
"Inspection Points."

①	
2 points	The checkpoint is completely separated by partitions, doors, etc.
1 point	There are partitions, doors, etc., but they can be open and undefined
0 points	No partitions, doors, etc.

②	
2 points	The entrance to the checkpoint is always closed
1 point	Sometimes the entrance to the checkpoint is open
0 points	The entrance to the checkpoint is open

③	
2 points	A disinfectant has been installed at the entrance to the checkpoint
1 point	A disinfectant has been installed at the entrance to the checkpoint, but the condition of the room is poor
-1 point	No disinfectants have been installed at the entrance to the checkpoints

④	
2 points	The checkpoint is always cleaned and kept clean every day
1 point	The CAT is cleaned as it becomes soiled and cleaning conditions are inadequate
-1 point	The gearbox doesn't retract
⑤	
2 points	A hand sanitizer container or soap basin is installed
0 points	There is a hand washing area, but only water washing is available
-1 point	Hands and fingers are not sanitized with disinfectants or soaps

⑥	
2 points	The checkpoint is always tidy and free of unnecessary items
1 point	The checkpoint is relatively cleaned up, but there are unnecessary items there
0 points	The checkpoint is filthy

⑦	
2 points	The gearbox is sufficiently ventilated with fan etc, no moisture build up, odor etc.
1 point	The CAT is ventilated with a fan, etc., but moisture and odor persist
0 points	The gearbox is not ventilated with a fan, etc., and moisture and odor persist in the gearbox

⑧	
2 points	Floor in the checkpoint, drainage system in order, no stagnation points
1 point	There is part of the floor in the CAT with poor drainage and is wet, and the water is stagnating a bit
0 points	The floor of the checkpoint room is poorly dried, sewage water stagnates heavily

⑨	
2 points	The milk collection system and filling tank are well cleaned and hygienic
1 point	The milk collection system and fill tank are hygienic, but cleaning is not enough
0 points	Milk collection system, filling tanks are not hygienic (filling tanks are not cleaned)

⑩	
2 points	Milk collection system and filling tank are regularly checked by specialists (contractors) at least once a year
1 point	The milk collection system and filling tanks have been checked by experts (suppliers) in the past. Or checked independently
0 points	Milk collection system and filling tank are not inspected

(4) Sanitary control of raw milk analysis preparations and equipment.
"Inspection Points."

⑨	
2 points	Purchased from a licensed supplier and confirmed by shelf life, quality and composition
0 points	The supplier is not particularly concerned about these issues

⑩	
2 points	For pesticides - receipt and payment records are recorded for all items
1 point	Regarding pesticides - no record book, a consignment note is maintained
0 points	For pesticides - no records or invoices are kept

⑪	
2 points	Storage of material is organized for each species
1 point	Storage is not organized for some materials
0 points	Storage of materials is not neat

⑫	
2 points	Preventing wild animals and pets from entering storage areas
0 points	No measures are in place to prevent wild and domestic animals from entering storage areas

⑬	
2 points	For disinfectants and cleaning supplies, records of receipt and payment are recorded for all items
1 point	For disinfectants and cleaning agents no record book is kept, only a bill of lading is kept
0 points	No records or invoices are maintained for disinfectants and cleaning supplies

⑭	
2 points	Disinfectants are stored in a cool and dark place
0 points	May be stored in an inappropriate location for disinfectant storage

⑮	
2 points	Milk testing reagents are kept in order and stored in a cool and dark place
1 point	Reagents for milk analysis are kept in order and stored at room temperature
0 points	Storage location of regents for assays not identified and organized

⑯	
2 points	Necessary information about the use of funds (date of use, individual number, usage, capacity, etc.) is recorded in books, etc., and efforts are made to preserve it
1 point	Are saved, and there is a way to track records
-1 point	There are no records and it is impossible to track even if necessary

XIY.Organization of production at the enterprise (EEU Decision No. 94)

1. Acceptance of milk

When milk arrives at a dairy processing plant (provided no other action is taken) it should be cooled and, if necessary, kept at a reduced temperature to minimize any possibility of an increase in the number of microbes it contains.

The principle that the milk that comes in first should be the first to be processed should be applied.

2. Intermediate processed products that are stored prior to further processing (processing) should be kept under conditions that limit (prevent) microbial growth or should be processed (processing) as soon as possible.

The maximum safety and suitability of milk and milk products, as well as the intensity of the control measures required during processing, depend not only on the initial microbial content of the raw material entering the dairy processing plant, but also on the effectiveness of preventing microbial growth in that raw material.

The use of proper storage temperatures and proper handling of raw foods are the main factors in reducing microbial growth.

Product compliance with the intended food safety and/or related objectives and criteria depends on the proper application of control measures, including time and temperature control.

The enterprise should have adequate turnover of raw materials and products stocks based on the principle of "first received - first sent".

3. storage and location of finished products

Milk and milk products must be stored at a temperature that maintains their safety and edibility from the time of packaging until consumption or cooking.

The storage temperature must ensure that milk and milk products are safe and edible throughout the manufacturer's specified shelf life. The storage temperature may vary depending on whether the product is perishable or not.

For perishable products, a distribution system must be developed to ensure that they are stored at low temperatures to guarantee the safety and edibility of these products.

When handling food products designed for long-term storage at ambient temperatures, extreme temperatures should be avoided primarily to ensure that the products have been kept under appropriate conditions.

Expected temperature disturbances should be taken into account when developing standard distribution and treatment models.

Organization of safety measures during and after treatment (processing)

It is important that safety measures are applied both during the initial production period and during processing. This will minimize or prevent microbiological, chemical or physical contamination of milk.

In addition, during the processing of various dairy products, special care must be taken to ensure that mutual contamination does not occur through negligence, including components that may contain allergens.

Note: A clear distinction can be made between the two types of safety measures used for contaminants of a microbiological nature and for contaminants of a chemical and physical nature.

The safety measures used for chemical and physical contaminants in food are mainly preventive. They aim to prevent contamination of food by chemical or physical contaminants. However, there are a few exceptions, such as the use of filters, safety nets and metal detectors to eliminate certain physical contaminants.

Microbiological food safety is ensured through the application of appropriate selected measures that are applied during the initial stages of production in conjunction with the safety measures used during and after processing.

The outcome of any bactericidal safety measure is highly dependent on the microbial content and concentration of microbial contaminants in the contaminated product.

It is therefore important to apply preventive measures both at the initial stages of production to reduce the initial pathogen content and during processing to prevent contamination during production.

The initial microbial content has a significant impact on the performance required for the microbiological safety measures applied during and after processing, as well as on the performance required for a product to be recognized as fit for food. The safety and suitability of the final product depends not only on the initial microbial content and efficiency of the process, but also on the subsequent growth of surviving organisms and contamination at subsequent stages of production and circulation.

Individual safety measures should be selected and applied in such a combination as to achieve appropriate performance and reduce the risk of end product hazards to an acceptable level.

Acceptable levels of contamination in the final product should be identified based on food safety objectives, end product suitability criteria, and other similar criteria.

Specific microbiological safety measures can be classified according to their primary functions as follows:

Bactericidal measures are measures aimed at reducing the content of microbes, e.g. by killing them, inhibiting their growth or physically removing them. These measures can be applied both during treatment in the process (e.g. microfiltration, temperature control, pasteurization) and afterwards as internal factors (e.g. oxidation);

Microbostatic measures are measures that prevent, limit or inhibit the growth of microorganisms by chemical or physical means.

Measures of this type are used to make the product resistant to the activities of pathogens and microflora that cause product putrefaction. They can be applied after milk production, during milk processing (e.g. as intermediate processing steps) and afterwards.

Nevertheless, microbostatic safety measures allow for the possibility of microbial re-growth, although they reduce it. Such measures, which are effective after treatment, can be applied to the product as external factors (temperature or time control) or introduced into the product as internal factors (preservatives, pH factor).

Microbostatic safety measures preventing direct contamination of a product are measures aimed at physically preventing or reducing microbial contamination of a product. They are implemented, for example, through the establishment of a closed production cycle, special technologies or appropriate packaging to protect the product.

The use of single-step treatments can have significant effects on microbial contamination levels (e.g., reduction in pH or water content), while other microbiological safety measures only reduce the number of microorganisms contaminating the product (or the environment where it is produced) at the particular stage of the production process to which they are applied.

Combining microbiological safety measures

More than one microbiological safety measure is usually required to control microbial content, inhibit or prevent putrefaction and foodborne illness.

Appropriate combinations of measures can be developed to reduce the number of certain harmful organisms and/or to make the product unsuitable for their further growth (activity). Such combinations are sometimes referred to in the dairy industry as "barrier technology".

Combinations of security measures have two main objectives:
during treatment - to provide assurance that levels of harmful pathogens and/or decay-causing microflora will not increase or will be reduced to acceptable levels;

post-processing (packaging, distribution and storage) - to ensure that acceptable levels of harmful pathogens and/or putrefactive microflora achieved during processing are controlled throughout the shelf life of the product.

Assurances may be required that microbial growth before treatment between the various treatment steps and after treatment is minimized.

The microbostatic safety measures used should be adapted to the needs associated with a particular product in a particular situation.

The final outcome in terms of safety and suitability of the final product depends not only on the initial microbial content and the effectiveness of the safety processes, but also on the success of the implementation of methods to subsequently prevent the growth of surviving microorganisms, as well as the effectiveness of preventing new stages of contamination.

Therefore, all combinations of microbiological safety measures should be accompanied by appropriate pre- and post-process preventive measures if their combined application is deemed necessary.

Depending on the source and possible pathways of microbial contamination, the threat can be controlled by preventive measures implemented at the initial stages of production and/or in the production environment.

In assessing the effectiveness of measures to prevent microbial contamination, it is particularly important to know what types of threats such measures may affect and to what extent they reduce the likelihood of contamination of milk during milking or of milk products during processing and/or marketing.

Microbiological hazards not amenable to prophylactic and microbostatic security measures should be prevented by appropriate bactericidal measures combined with some other measure.

Measures to prevent microbial contamination that are only effective during the application phase should be used in appropriate combinations with other microbiological measures.

A combination of measures is most effective when it is multi-targeted, i.e. when different specific measures are selected to affect different factors on which microbial survival depends, e.g. pH factor, water activity, nutrient availability, etc.

Generally, a multipurpose combination of measures is much more effective than any single measure applied at high intensity.

The use of several measures that inhibit the growth of microorganisms or reduce their numbers can have a synergistic effect, where the cumulative effect of their combined application is much better than would be expected from applying the same measures individually.

XY.Microbiological and other indicators of suitability of raw materials (EEU Decision No. 94)

Upon receipt for processing, milk should be subjected to organoleptic control:

For example, such as temperature, acidity, level of microbial contamination and chemical contamination.

Any failure of incoming milk to meet these criteria (especially for pathogens) should result in immediate changes on the farm and in the processing plant. Examples of the latter are:

-refusal to use this batch of milk for the production of raw milk products;

-changing the milking procedure (cleaning procedures for milking equipment, udder, etc.);

-improving the quality of animal feeding on the farm where the milk came from;

-improvement of hygienic qualities of water intended for animal watering;

-Changes in animal housing technology;

-individual animal examinations to identify the individual (or individuals) who may be the vector of the disease; isolation of this individual from the herd if necessary.

The changes made need to be outlined and implemented, and dairy farms may require additional specialized assistance.

In some cases where a broader set of measures is used to guarantee the safety and suitability of milk, as when raw milk is planned to be used in the production of raw dairy products, it may be necessary to classify farms into 2 groups:

- suitable and unsuitable for the production of raw milk, and in establishing additional requirements for milk used in the manufacture of dairy products that have not undergone thermal heat treatment.

Depending on the results of the manufacturer's threat analysis and the combination of safety measures applied during and after dairy processing, it may be necessary to establish additional specific microbiological purity criteria.

Measures to ensure microbiological safety

Note*: The* safety measures described in this section are provided as illustrative examples only and should only be used after their effectiveness and safety have been confirmed.

Microbial growth depends on many environmental factors such as: ingredients, nutrients, water activity, pH, presence of preservatives, competitive microorganisms, gas atmosphere, redox potential, temperature and shelf life.

By controlling these factors, microbial growth can be limited, slowed or prevented.

Microbiological safety measures, as well as measures that protect the product from direct contamination by microbes from the environment, perform microbostatic functions.

Many microbostatic measures affect the homeostatic mechanisms of microorganisms that allow them to proliferate or persist to survive environmental exposures.

Maintaining homeostasis of the internal environment requires substantial energy and plastic costs from the microorganism. Therefore, when a microbial measure disrupts homeostasis, the microorganism will lack the energy to reproduce and will remain in a latent phase. Some microbial cells may die in this process before their homeostasis is restored.

Examples of typical microbostatic measures:

Pasteurization of milk and liquid dairy products

Minimum pasteurization conditions are those that have a bactericidal effect equivalent to heating milk to 72 °C for 15 seconds (continuous flow pasteurization) or to 63 °C for 30 minutes (intermittent pasteurization). Similar conditions can be achieved by following the line connecting these points on the time-temperature relationship diagram.

The required processing time decreases rapidly at the same time as the minimum temperature increase. Extrapolation of temperatures outside the range 63 - 72 °C and, in particular, processing at temperatures above 72 °C must be carried out with extreme caution, as this technique has not yet been experimentally studied.

For example, it would be extremely difficult (if not impossible) to determine the effectiveness of pasteurization at 80 °C, because in this case the extrapolated processing time would be approximately 0.22 seconds to achieve at least a 5-fold reduction in bacterial population.

To ensure that each particle is sufficiently heated, the flow of milk in the heat exchangers must be turbulent.

When a proposal is made to change the composition, processing and use of a product, the planned heat treatment should also be changed accordingly, after which a competent person should evaluate its effectiveness.

For example, the fat content of cream necessitates minimum conditions higher than those for milk: at least - 75 °C for 15 seconds.

Liquid dairy products with high sugar content or high viscosity also require pasteurization conditions in addition to the minimum conditions specified for milk.

Process validation

According to an acceptable method, products subjected to pasteurization should show a negative reaction for alkaline phosphatase immediately after heat treatment. Other methods may also be used to show that appropriate heat treatment has been applied.

In many dairy products (cream, cheese, etc.) alkaline phosphatase can be recovered. In addition, microorganisms used in the manufacture of the product may produce microbial phosphatase and other substances that can distort the results of residual phosphatase tests. Therefore, this specific test method should be performed immediately after heat treatment in order for the results to be reliable.

6.5.HACCP in a food production facility

(production, office, housekeeping part). Clean, dirty area.

The production is divided into office, production, and housekeeping parts.

HACCP inspection procedures:

-office -documentary;

-production from clean zone (packing, labeling shop) to dirty zone (sanitary pass, production laboratory, milk reception, milk pasteurization shop, butter shop, cheese shop, etc.);

-territory - economic part (hard pavement, washing and steaming of vehicles, parking, place for garbage can (household/production waste), desbarrier, security, Signboard about the name of the dairy, address, Mode of operation).

Raw milk receiver	Points to be inspected	Inspection results	Enhancement	Responsible Officer
separator	No extraneous noises, fluid leaks, etc.	compliant/not compliant.		B
Plate sterilizer	Is there any fluid leakage from the plate, does the pump make any noise, etc.?	compliant/not compliant.		B
Batch sterilizer	No liquid leaks from the steam line, etc.	compliant/not compliant.	There was a leak from the steam line, so the gaskets were replaced.	B
Cooling device	Is the equipment operating properly, no fluid leaks, etc.?	compliant/not compliant.		B

6.6. Inspection Highlights and Corrective Actions for Non-conformities

(food production inspection procedures, reporting and recommendations)

- Documentation (logs, checklists, HACCP plan, acts, regulations)

Maintenance and management of facilities, equipment and devices (premises and equipment)

Name of equipment/room	Inspection points	Inspection results	Enhancement	Responsible Officer
Around the facility	Clean, no damage to exterior walls, etc.	compliant/not compliant.		A
Drainage system	Clean and undamaged?	compliant/not compliant.	Milk solids remained in the effluent, so it was cleaned up	A
Waste storage area	Are the garbage cans not leaking? Is the garbage sorted?	compliant/not compliant.		A
Internal walls, ceilings and floors in the workshop	Is there any damage and is the overall state of repair satisfactory?	compliant/not compliant.		A
Storage location for tare and packaging	Condition is clean, no tools or other items are present	compliant/not compliant.	The place was dirty and untidy	A
Equipment and machinery	Are food contact surfaces protected from contamination?	compliant/not compliant.		A

Implementation Date: Month/Year Confirmation Date: Confirming Party:

a. Maintenance and management of facilities, equipment and devices (Production equipment)

b. Calibration and accuracy of measuring instruments

Device name	Inspection points	Inspection results	Enhancement	Responsible Officer
Self-recording temperature recorder for sterilization equipment		compliant/not compliant.		C
Remote thermometer for sterilization equipment		compliant/not compliant.	Replaced with a new one, calibrated due to out of specification.	C
Flow meter for sterilization equipment		compliant/not compliant.		C
Thermometers for thermostatic incubators for checking		compliant/not compliant.		C
Storage tank thermometer		compliant/not compliant.		D
Cooling system thermometer		compliant/not compliant.		D
Ripening tank thermometer		compliant/not compliant.		D
Refrigerator thermometer for food		compliant/not compliant.		D
Thermometers for storing long-life food		compliant/not compliant.	Replaced with a new one due to an error greater than +3°C.	D

Implementation Date: Month/Year Confirmation Date: Confirming Party:

c. Temperature control of rooms and equipment

Object system	Implementation details (example)	Responding to problems(example)
Cooling system (when taking milk)	(Check the temperature before, during and at the end of each production day)	Realizing the improvement of cooling function, etc.
Cooling system (during sterilization)	(Check the temperature before, during and at the end of each production day)	
Product refrigerator	(Check the temperature before, during and at the end of each production day)	

Implementation Date: Month/Year Confirmation Date: Confirming Party:

HACCP plan

a. **HIST records of continuous sterilization monitoring**
b. **Maintain documentation on sterilization management**

1. HACCP Plan

a. Maintain sterilization management records

Date held:

Reference standard: 30 minutes, more than 65℃

Date of confirmation: By whom confirmed

(batch sterilizer]

Product Name	Initial sterilization temperature nations	Sterilization start time nations	Sterilization end time nations	Temperature at the end of sterilization nations	Sterilization time nations (min.)	Temperature graph Acknowledge denomination	Responsible person

[Corrective Action Record] (Record Date, Who Recorded)

Confirmation of corrective action record] (Record date, production manager)

2.HACCP Plan

b. HIST continuous sterilization monitoring records

Date held:

Control standard: sterilization at 92°C or higher for 20 seconds (corresponds to a flow rate of 300 L/h or less)

Methods of corrective actions in case of deviation

i. If FDV is activated (stop pumping fluid, switch circulation)
ii. If FDV is not activated, manually stop the entire process as soon as possible.
iii. If the flow rate exceeds the specified value, manually stop the entire process as soon as possible.

[Monitoring Records.]

Time	Product Name	Self-registration handheld thermometer	Confirmation of the thermometer diagram	Local thermometer	Flowmeter	Improvement measures	Responsibility person

[Checking FDV operation]

Checking FDV operation	Verification of FDV operation before production	Confirmation of FDV operation after manufacturing	Confirmation date	Responsible person

[Corrective Action Record] (Record Date, Who Recorded)

[Confirmation of corrective action record]

Appendix no.

Risk Log, KCP, Monitoring, CD, Verification, Documentation

Critical Control Points (CCPs)	Risks to be included in the HACCP Plan	Critical limits for each control measure	**Monitoring**				Corrective actions	Verification actions	Documentation of procedures

CHECK LIST

Name		SOP			Journal Entry	
		Yes(✓)	Title of the document		Yes(✓)	Title of the document
1	Cleaning, disinfection of machinery, equipment and appliances	□			□	
2	Calibration of instrument (thermometer, pressure gauge, flow meter, etc.) and equipment (sterilization, water purification)	□			□	
3	Water quality control implementation plan	□			□	
4	Pest elimination and monitoring works	□			□	
5	Waste storage and disposal	□			□	
6	Checking the acceptance of raw materials and shipment of finished products	□			□	
7	Inspection of food samples	□			□	
8	Measures in case of emergency (contacts of emergency services, Ministry of Health, etc.)	□			□	
9	Measures for recalled products, actions for returned products (place of storage and method of disposal of recalled and returned products)	□			□	
10	Conducting medical examinations and fecal tests on employees	□			□	
11	Hand washing, personal hygiene control, health check before starting a shift	□			□	
12	Assessing knowledge and delivering training	□			□	

HACCP documents

1	Product Specification	□
2	HACCP group list	□
3	Block diagram of the production process	□
4	Record monitoring	□
5	Records of corrective actions	□
6	Verification records	□
7	Hygienic control monitoring records	□
8	Records of hygienic control corrective actions	□

Report on the results of corrective actions

Appendix no.

Corrective action log

Name		SOP	Journal Entry

			Yes(✓)	Title of document	Yes(✓)	Title of document
1	Cleaning, disinfection of machinery, equipment and appliances		□		□	
2	Calibration of instrument (thermometer, pressure gauge, flow meter, etc.) and equipment (sterilization, water purification)		□		□	
3	Water quality control implementation plan		□		□	
4	Pest elimination and monitoring works		□		□	
5	Waste storage and disposal		□		□	
6	Checking the acceptance of raw materials and shipment of finished products		□		□	
7	Inspection of food samples		□		□	
8	Measures in case of emergency (contacts of emergency services, Ministry of Health, etc.)		□		□	
9	Measures for recalled products, actions for returned products (place of storage and method of disposal of recalled and returned products)		□		□	
10	Conducting medical examinations and fecal tests on employees		□		□	
11	Hand washing, personal hygiene control, health check before starting a shift		□		□	
12	Assessing knowledge and delivering training		□		□	

HACCP documents

1		Product Specification	□
2		HACCP group list	□
3		Block diagram of the production process	□
4		Record monitoring	□
5		Records of corrective actions	□
6		Verification records	□
7		Hygienic control monitoring records	□
8		Records of hygienic control corrective actions	□

Examples of typical microbostatic measures: ***Appendix no.***

Carbon dioxide (CO_2)	the addition and/or generation of carbon dioxide during processing processes to produce long-term microbostatic effects, including creating anaerobic conditions by replacing oxygen, lowering pH, inhibiting certain intracellular enzymes (decarboxylation) and inhibiting the transport of water-soluble nutrients through the membrane (by dehydration of the cell membrane). The effectiveness depends mainly on the point of application. In ripened cheese, the release of carbon dioxide from the cheese to the external environment is often used to provide anaerobic conditions in the free space of the cheese package
Coating	creation of a physical barrier protecting products from microbial contamination. Antibacterial agents can be incorporated into the coating to achieve a gradual removal of microorganisms from the surface
Freezing	lowering the temperature below the freezing point of the product simultaneously with the reduction of water activity. Freezing has both microbostatic and microbocidal effects
Lactoferrin	Inhibition of microbial development by natural glycoproteins (with the highest concentration in the milk), allowing to prolong the latent phases of bacteria for 12 - 14 hours, through the binding of iron ions in the presence of bicarbonates.
Lactoperoxidase system	Activation of the lactoperoxidase system, or thiocyanate, or hydrogen peroxide

Carbon dioxide $(CO)_2$	the addition and/or generation of carbon dioxide during processing processes to produce long-term microbostatic effects, including creating anaerobic conditions by replacing oxygen, lowering pH, inhibiting certain intracellular enzymes (decarboxylation) and inhibiting the transport of water-soluble nutrients through the membrane (by dehydration of the cell membrane). The effectiveness depends mainly on the point of application. In ripened cheese, the release of carbon dioxide from the cheese to the external environment is often used to provide anaerobic conditions in the free space of the cheese package
	(internal system in milk) aimed at inactivating several metabolic enzymes vital to bacteria, resulting in a multipoint blockage of their metabolism and ability to multiply
Modified atmosphere	creation of a gaseous environment (low oxygen and/or high carbon dioxide or nitrogen content) to inhibit the growth of aerobic microorganisms by weakening the biochemical mechanisms of bacterial cell metabolism. Modified atmosphere packaging (MAP) is a product packaging technology in which a modified gas environment is created inside the package. It should be considered that creating an anaerobic environment to inhibit the growth of aerobic microorganisms may cause rapid growth of certain anaerobic pathogens
Packaging	packaging provides a physical barrier that protects products from access by microorganisms from the external environment
Decrease in pH	creation of an acidic environment leading to the penetration of additional hydrogen ions into the cytoplasm of microorganisms, thereby disrupting the mechanisms for maintaining the constancy of intracellular pH responsible for maintaining the functionality of key cell components that are vital for continued growth and vital activity. Low pH values can be obtained by fermentation or the addition of acids (organic or inorganic). A pH value low enough to prevent microbial growth is different for each particular pathogen, but is usually in the range of 4.0 - 5.0 pH. At low pH, microorganisms become more sensitive to other antimicrobial measures as well. There may be a synergistic relationship of lowering pH with salt, water activity, organic acids, the lactoperoxidase system, and antibacterial agents
Use of preservatives	The addition of certain additives to a product to increase its preservation and stability through direct or indirect antibacterial and/or antiseptic action. Most preservatives are quite specific and act only on certain types of microorganisms
Redox potential control	Redox potential (ORP) is a quantitative measure of the oxidizing or reducing power of a nutrient medium that determines which organisms are able to grow under given conditions (aerobic or anaerobic). The ORP can be affected by removing oxygen and/or adding reducing agents (e.g. ascorbic acid, sucrose, etc.).
Cooling	lowering product temperature to inhibit microbial activity
Time	the practice of organizing very short collection (storage) periods that limit the shelf life of products, or of treating raw milk immediately to ensure that any microorganisms present are in a latent phase, therefore inactive and more susceptible to other antimicrobial measures
Water activity control	control of the water activity (WA) in a food (meaning the availability of water to microorganisms, not the water content of the food), expressed as the ratio of the water vapor pressure present in the food to the vapor pressure of pure water. The value of AB sufficient to prevent microbial growth is different for each particular pathogen, but is usually between 0.90 and 0.96. Water activity can be controlled by: concentration, evaporation and drying, which also increases the buffering capacity of milk (synergy) salting (addition of table salt), which also reduces cell resistance to carbon dioxide and affects oxygen solubility (synergy)sweetening (addition of

Carbon dioxide $(CO)_2$	the addition and/or generation of carbon dioxide during processing processes to produce long-term microbostatic effects, including creating anaerobic conditions by replacing oxygen, lowering pH, inhibiting certain intracellular enzymes (decarboxylation) and inhibiting the transport of water-soluble nutrients through the membrane (by dehydration of the cell membrane). The effectiveness depends mainly on the point of application. In ripened cheese, the release of carbon dioxide from the cheese to the external environment is often used to provide anaerobic conditions in the free space of the cheese package
	sugar), which when the AB value is below 0.90 to 0.95 also results in antibacterial effects, depending on the type of sugar (synergy)

Bactericidal measures or measures of actual elimination reduce microbial content, e.g. by destroying, deactivating or removing them.

Many microbiological safety measures have a range of functions. Some, such as pH reduction, refrigeration, freezing, the use of preservatives and internal antibacterial protection systems, also have a bactericidal effect, the extent of which often depends on the intensity of their application.

Pasteurization and other methods of heat treatment of milk with at least equivalent efficacy are applied so intensively (at appropriate combinations of time and temperature) that they actually destroy some pathogens. For this reason, these methods have traditionally been used as key bactericidal measures in the manufacture of dairy products. Nonthermal bactericidal measures with similar efficacy have not yet been applied so intensively to ensure the safety of the dairy product at the application stage.

Examples of typical bactericidal measures:

Centrifugation	removal of high-density microbial cells from milk by centrifugal forces. This measure is most effective against high density microbial cells, especially bacterial spores and somatic cells
Commercial sterilization	High-temperature treatment of milk and milk products for a time sufficient to render them commercially sterile, thereby allowing them to remain safe and microbiologically stable at room temperature
Competitive microflora	reduction of unwanted microorganisms by lowering pH, absorbing nutrients and producing antibacterial substances (such as nisin, other bacteriocides and hydrogen peroxide). Typically, this microbiological measure is applied when selecting a sourdough starter. Effectiveness is determined by multiple factors including rate, pH reduction rate, and changes at a given pH level
Preparation of cheese mass	high-temperature treatment of cheese mass mainly for technical purposes. This heat treatment is less intensive than thermization but makes microorganisms more susceptible to other microbiological measures
Electromagnetic energy treatment:	electromagnetic energy is generated by high voltage electric fields in which the frequency changes millions of times per second (< 108 MHz), e.g. - microwave energy (thermal effects), radio frequency energy (non-thermal effects) or high voltage electric pulses (10 - 50 kV/cm, non-thermal effects). These treatments disrupt cells by creating pores in their membranes through the formation of electrical charges in the cell membrane
High-pressure treatment	Application of high hydrostatic pressure to cause irreversible damage to sporeless cell membranes
Microfiltration	removal of microbes, their aggregations and somatic cells by passing the product through a microfilter. Typically, the pore size of the filter is approximately 0.6-1.4m, which is sufficient to filter out most of the bacteria. This method can be used in combination with heat treatment

Centrifugation	removal of high-density microbial cells from milk by centrifugal forces. This measure is most effective against high density microbial cells, especially bacterial spores and somatic cells
pasteurization	High-temperature treatment of milk and liquid dairy products, aimed at reducing the number of any pathogenic microorganisms to a level at which they do not constitute a significant risk to human health.
High intensity pulsating light	treatment (e.g. of packaging material, equipment and water) with high-intensity broadband light pulses in the ultraviolet, visible and infrared spectrum (about 20,000 times more intense than sunlight) to kill microorganisms. Due to its inability to penetrate opaque substances, this technology is only effective when dealing with open surfaces (e.g. after biofilm removal) and thus prevents mutual contamination
Fermentation (ripening)	the storage of a product for a certain amount of time at a certain temperature and under certain conditions that result in the biochemical and physical changes necessary to make cheese. When this process is applied as a bactericidal measure, the multifactorial, complex system that develops in cheese (acidity, hostile flora, reduced water activity, bacteriocidal and organic acid metabolism) is used to influence the microenvironment in food products and, as a consequence, the composition of the microflora present in them
Termization	high-temperature treatment of milk, less intensive than pasteurization and aimed at reducing the number of microorganisms. The expected reduction in the number of bacteria can be as high as 3-4 orders of magnitude. Surviving microorganisms exposed to high temperatures will become more vulnerable to subsequent microbiological measures
Ultrasonic treatment	treatment with high intensity ultrasound (18-500 MHz) causing cycles of contraction, expansion and cavitation in microbial cells. The implosion of microscopic gas bubbles leads to the formation of regions of very high pressure and temperatures that can lead to cell destruction. This method can be more effective when used in combination with other microbiological safety measures. When applied at high temperatures, this treatment is often referred to as "temperature-ultrasound" treatment
Heat sealable packaging	High temperature (80-95°C) treatment of the solid end product associated with the packaging process, e.g. to hold the product in a viscous state for proper packaging. This process can be carried out either in an in-line system or in batch processes. The product is sealed at packaging temperature conditions and cooled for further storage (distribution). In combination with the low pH factor in the products (e.g. below 4.6) a product sealed in heat sealable packaging may be commercially sterile, as it is possible that any surviving microorganisms will be rendered incapable of further growth. Additional microbostatic measures should ensure appropriate cooling rates for packaged products to minimize the potential for growth in bacteria of the Bacillus cereus species