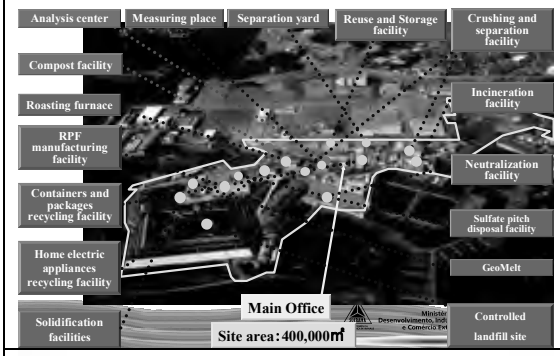
Highlights for the Landfill of Arax Group (Kimitsu):

- **Monitoring of the lining of the landfill to detect leaching (every 4 meters);**
- **Social action: scheduled visits of the community to the landfill (free transportation and lunch);**
- **Promotion of parties for the community on specific dates;**
- **Periodic visit of students from the local schools to the landfill with the objective of fostering the environmental education.**

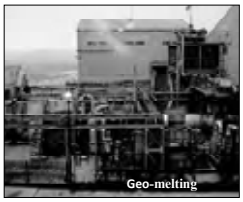
- **The following kinds of IWM facilities are located in the center:**

1. **Compost facility**
2. **Roasting furnace**
3. **RPF manufacturing facility**
4. **Home electric appliances recycling facility**
5. **Solidification facility**
6. **Crushing and separation facility**
7. **Incineration facility**
8. **Neutralization facility**
9. **Sulfate pitch disposal facility**
10. **GeoMelt**
11. **Controlled landfill**



RECYCLING CENTERS

Mie General Recycling Center



RECYCLING CENTERS

Mie General Recycling Center

RECYCLING CENTERS

Mie General Recycling Center

RECYCLING CENTERS

Recycling Incentives :

Economic feasibility:

- The market is stimulated by the government participation and the competitiveness among the operating companies;
- Identification of market niches (reverse logistics; energetic reuse);
- Continuous research to obtain process optimization technologies (patentable);
- Construction of a good social reputation.

Thank you for your Atention!!

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Presentation 3 for 3rd Workshop (April 6, 2010): IWM Administration in Japan

Session 3

Industrial Waste Management Administration in Japan

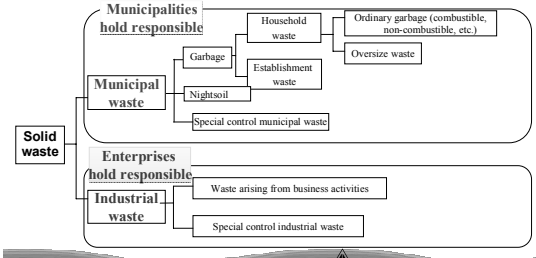
Armando Bandeira dos Santos Jr.
SUFRAMA

April 6, 2010

Ministério do Desenvolvimento, Indústria e Comércio Exterior

Solid Waste Classification and Responsibility in Japan

- Solid waste arising from business activities is termed "**industrial waste**" and the enterprise is responsible for treating it.
- All other solid waste is termed "**municipal waste**" and municipalities are responsible for management



- **Responsibility for the treatment of Urban Solid Wastes:** Responsibility from the Provincial Government; the Government pays the service companies to recycle/treat such wastes
- **Responsibility for the treatment of Industrial Wastes:** Responsibility from the generator; nevertheless, it is transferred to the management company once the wastes services company is hired; the role of the generator is to identify problems in the source of the wastes.

National (Federal) Government

- ***Defining national waste management policy,***
- ***Setting standards for the appropriate waste management,***
- ***Financial and technical support to the local government, etc.***

Prefectures (States)

- ***Establishing regional waste management program,***
- ***Ensuring the appropriate management of industrial waste,***
- ***Authorization for waste treatment facilities and landfills,***
- ***Providing technical aids to the municipalities, etc.***

Municipal Government

- ***Establishing municipal general waste management program,***
- ***Authorization for general waste treatment agents,***
- ***Treatment of municipal general waste & human waste, among others***

Municipal Solid Waste = Domestic or Urban Solid Waste

- **Japanese Population**
  - **make an effort for waste reduction, waste recycling, waste separation, and self-disposal of waste**
  - **follow up application/improvement of environmental laws**
  - **check the factories activities**
  - **accept to pay for special waste recycling**

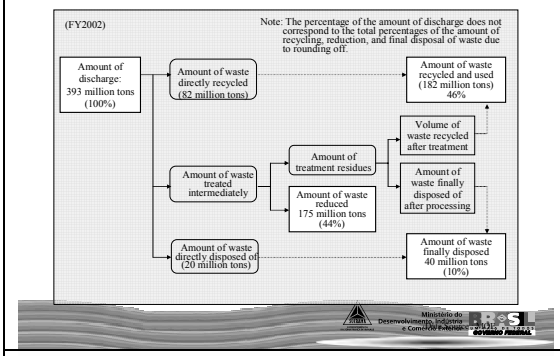
- **Companies**

– treat waste produced by their own business activities under their own responsibility (on-site management)

– make their best effort in reducing waste by recycling, reuse and reduction.

– motivated by governmental support and internal competitiveness, waste service companies make searches in order to develop new treatment technologies and build up a positive image among the people

- **Prefectural (State) Government**
  - **License to treat industrial waste and to install industrial waste facilities**
  - **On-the-spot inspection for companies, treatment contractors, and industrial waste facilities**
  - **Establish prefectural industrial waste treatment plans**
- **National (Federal) Government**
  - **Promote technical development concerning collection, arrangement, and the provision of information on wastes and their treatment**
  - **Make the best efforts to provide technical and financial support for prefectural and municipal government to fulfill their own duties**
  - **License to import waste and verify the export of waste**



Legal Framework

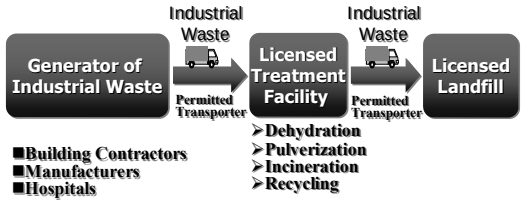
Fundamental Law for Establishing a Sound Material-Cycle Society

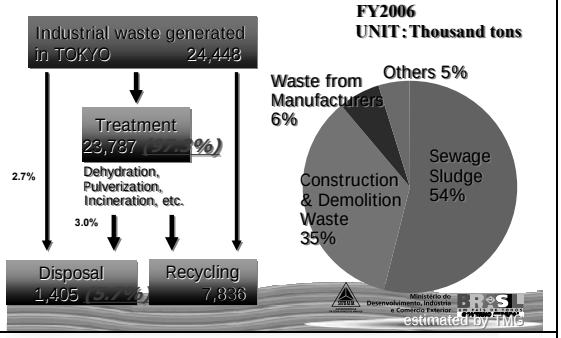
- Waste Management Law
- Law for the Promotion of Effective Utilization of Resources

- Containers and Packaging Recycling Law
- Home Appliance Recycling Law
- Construction Material Recycling Law
- Food Waste Recycling Law
- End-of-Life Vehicle Recycling Law

- ***Basic principle for the sound material-cycle society:***
  1. *Source reduction or waste prevention*
  2. *Reuse*
  3. *Recycling*
  4. *Energy recovery*
  5. *Appropriate disposal*
- ***Extended producer responsibility: EPR***

IWM by Tokyo Metropolitan Government





Transformation into a recycling-oriented society

- Reduction of natural resource consumption and waste generation
- Minimization of environmental risks in the process of waste treatment

- **Reducing generation and promoting recycling**

①Reduce the final disposal of waste to 1,600,000 tons in FY2010(Reduction of 35% from FY2004)

②Promote recycling waste plastic to achieve zero landfill disposal

③Increase the use of construction mud by 50%

- **Reduction of environmental risks concerning waste treatment and recycling**

④Establish a system for hazardous waste treatment within Tokyo

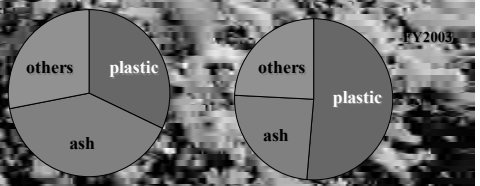
⑤Reinforce wide-area cooperation in the metropolitan area to eradicate illegal dumping of industrial waste

- **Promotion of the development of sound waste treatment and recycling business**

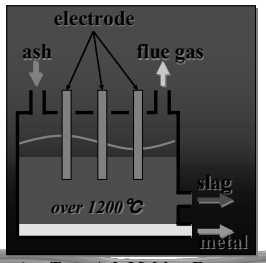
⑥Establish a system that enable reliable industrial waste disposal contractors to enhance their market value

Toward Zero-Landfilling: Plastic Recycling

Composition of Landfilled MSW



TMC's landfill site



Arc Type Ash Melting Furnace

In Tokyo 23 wards, most of incinerator ash is melted into slag to be used as civil engineering material.

slag

In the TAMA region, all of the incinerator ash is used to produce Eco-cement.

benches

Eco-cement facilities

interlocking blocks

- **Most of industrial wastes are disposed of by licensed private companies.**
- **About three quarters of industrial waste generated in Tokyo is disposed of in other prefectures.**
- **We are cooperating with other local agencies to prevent illegal dumping.**
- **We are promoting Super Eco-Town Project in order to establish environmentally sound industrial waste management.**

- **TMG aims to build a recycling-oriented society by implementing the measures set forth in the TMG waste management plan.**
- **The residents should fulfill their responsibilities as waste generators and improve their daily purchasing behavior.**
- **According to the concept of EPR, business companies should take a responsible approach to reduce waste.**
- **TMG will build new recycling systems and engage in the development of a wide-area framework in collaboration with private-sector companies and municipal governments.**

General Law Concerning the Dissemination of the 3 Rs:

- The factories must follow the following measures:

1 - Reduce the generation of sub-products in the production process and reuse the used products as raw-material;

2 - Adopt zero emission measures;

3 - Collection and recycling of used products.

The governmental efforts in creating and solidifying an environmental culture in Japan was just providential, once the development of the production and consumption as those noticed in that country in the 1960s do not usually imply in good examples concerning the handling of both municipal and industrial wastes.

Japan got to overcome such trend by inventing in environmental education and crating strict laws for the separation, collection, transport, treatment and final disposal of the wastes by generators and management companies.

MASTER PLAN

Suggestions from SUFRAMA technicians for the MASTER PLAN:

1- Legislation: specific regulation for the 3Rs;
2- Create a department for the Management of Industrial Wastes in Suframa;
3- Give suport to awareness programs through of educational actions related to the advantages of environmental preservation;
4- Implementation and monitoring of the Waste Inventory Data Base, in partnership with IPAAM;
5- Suport for the companies and other demands regarding to IWM;
6- Incentive for the setting of new WS and Recycling companies;
7- Acknowledge the recycling actions of the factories, such as a green stamp or award;

MASTER PLAN

Suggestions from SUFRAMA technicians for the MASTER PLAN:

8- Extend the adoption of ISO 9001 (Decree 783/1993), foreseen for the PBP of the large factories, also for ISO 14001 (currently voluntary);
9- Obligation of minimum percentages for on-site waste treatment, in relation to annual amounts generated for each factory;
10- Subsides for the acquisition/renewal of machines and to obtain tested/patented technologies from large management companies in Brazil and abroad, including the treatment of their own wastes.

Thank you very much!
Arigato gozaimasu

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Presentation 4 for 3rd Workshop (April 6, 2010): IWM Master Plan in PIM

Session 4

Industrial Waste Management Master Plan (Draft) in PIM

April 6, 2010

Counterpart to JICA Study Team

Study for the Development of an Integrated Solution Related to Industrial Waste Management in the Industrial Pole of Manaus

1

Agenda

1. **Objective of the Industrial Waste Management (IWM) Master Plan (M/P) in PIM**
2. **Current Issues of IWM in PIM**
3. **Outline of IWM M/P (draft) in PIM**

2

1. Objective of the IWM M/P in PIM

- **Target year of the M/P is 2015. => It is an Action Plan for 5 years .**
- **Establish an appropriate IWM system in PIM in 2015.**
- **Requirements to reach the proposed objectives:**

1. **Establish the appropriate treatment /disposal of IW and the 3Rs (Reduce, Reuse, Recycle) in PIM.**
2. **Avoid improper treatment and disposal.**

Eliminate negative environmental impacts.

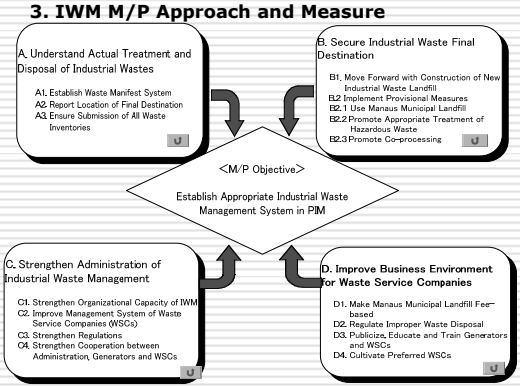
3

2. Current Issues of IWM in PIM

a. **Clarification of Industrial Waste Treatment and Disposal Practices**
b. **Lack of a Landfill with Operation License**
c. **Inconsistent Administration of the Industrial Waste Management System**
d. **Poor Business Environment for Industrial Waste Treatment and Disposal**

4

3. IWM M/P Approach and Measure



Approach A. Actual Treatment and Disposal of Industrial Waste

A. Understand Actual Treatment and Disposal of Industrial Wastes

- A1. Establish Waste Manifest System
- A2. Report Location of Final Destination
- A3. Ensure Submission of All Waste Inventories

6

Measure A1. Waste Manifest System (WMS) (1)

- ☐ **Objective: IPAAM is in charge of the IWM conditions from discharge to final destination.**
- ☐ **Content:**

1. **IPAAM will a set a format for the waste manifest in Amazonas State, collaborating with the INEA (State Institute of Environment) of Rio de Janeiro and others.**
2. **Waste manifest on-line.**

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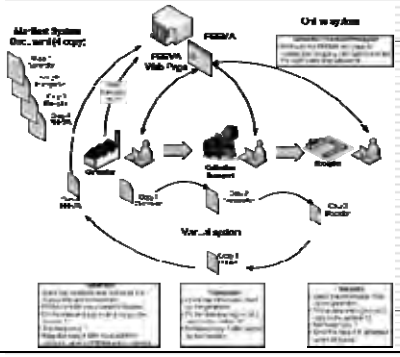
Measure A1. Waste Manifest System (WMS) (2)



8

Measure A2. Report Location of Final Destination (1)

- ☐ **Objective: Until the manifest system is established, IPAAM will understand and manage the final destination of factory waste.**
- ☐ **Content:**
- ☐ **IPAAM requires generators (factories) to specify the final destination of IWs on the application for operational license.**
- ☐ **IPAAM requires all waste service companies to specify the final destination of wastes they are contracted to handle.**

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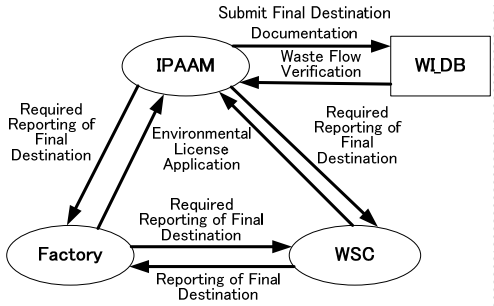
Measure A2. Report Location of Final Destination (2)



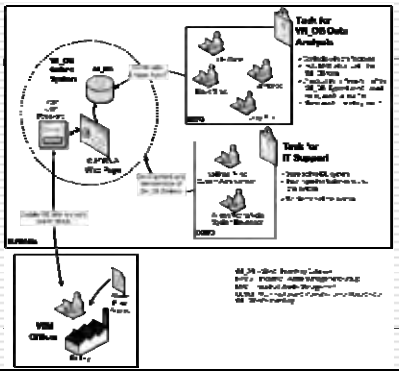
Measure A3. Ensure Submission of All Waste Inventories (WIs) (1)

- ☐ **Objective: Raise the number of WIs submitted from 1/4th to 100%.**
- ☐ **Content:**

1. **Develop a waste inventory database (WI_DB).**
2. **Standardize WI reporting form in order to standardize input into WI_DB, and prepare guidelines.**
3. **Instruct factories to appoint an IWM officer that will prepare the WI**
4. **Hold explanatory meetings on how to fill out WIs to ensure IWM officers at all factories understand the reporting forms.**
5. **Furthermore, arrange on-line preparation of WI**

11

Measure A3. Encourage Submission of WI (2)



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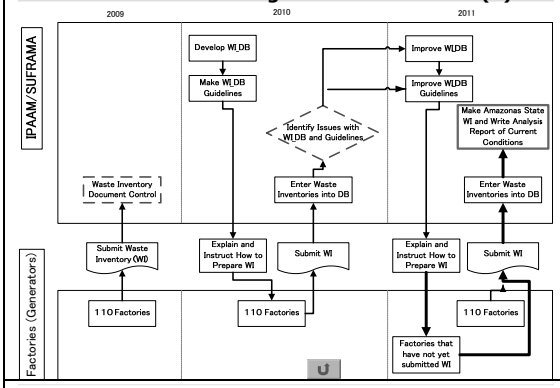
Measure A3. Encourage Submission of WI (3)



Approach B. Secure Industrial Waste Final Destination

B. Secure Industrial Waste Final Destination

- B1. Move Forward with Construction of New Industrial Waste Landfill
- B.2 Implement Provisional Measures
- B2.1 Use Manaus Municipal Landfill
- B2.2 Promote Appropriate Treatment of Hazardous Waste
- B2.3 Promote Co-processing

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Measure B1. New IW Landfill

- **Objective: Construct a new IW disposal site as the primary final destination for IW**
- **Content:**

1. **Create a system where waste generators bear the necessary disposal fee.**
2. **Promote the previous treatment before disposal.**
3. **In addition to beneficial policies in the tax system, consider subsidies or other funding schemes for the construction of the landfill.**
4. **Make sufficient social and environmental considerations.**

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Measure B2. Provisional Measures

Measure B2.1. Use of Manaus Municipal Landfill (1)

- **Objective: Use Manaus Municipal landfill as Final Destination until the new landfill is operational.**
- **Content:**

1. **Construct a dedicated site for Non-HIW & Non-inert industrial waste at one section of the Manaus Municipal landfill (ATRINI: Non-HIW & Non-inert Temporary Disposal Site).**
2. **Generators will pay a disposal fee for ATRINI.**
3. **ATRINI for the disposal of IW at ATRINI, which is strictly separate from the disposal site for municipal waste.**

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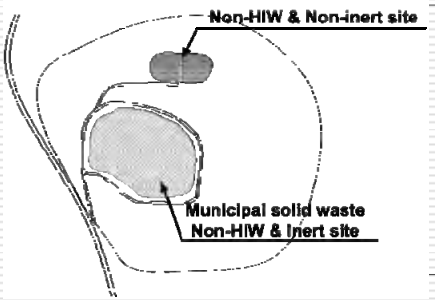
Measure B2.1. Use of Manaus Municipal Landfill (2)



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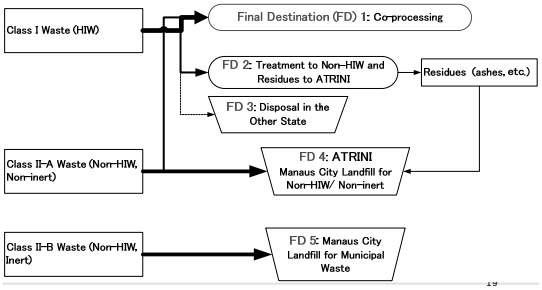
Measure B2.2. Appropriate Treatment of Hazardous Industrial Waste (HIW) (1)

- **Objective: Indicate measures and promotion methods for the appropriate treatment of hazardous industrial wastes.**
- **Content:**

1. **Promote co-processing which utilizes waste as fuel and /or raw material.**
2. **Promote the treatment of the non-processing HIW in a licensed facilities and dispose them of in ATRINI.**
3. **For HIW that cannot be treated, it will be taken to a treatment and disposal facility in another state. The storage at the factory for a later disposal in Amazonas, should be approved by IPAAM.**

18

Measure B2.2. Measures and methods for the appropriate treatment of hazardous industrial wastes (HIW) (2)



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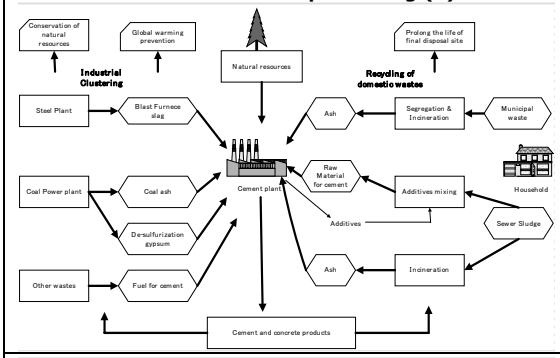
Measure B2.3. Co-processing (1)

- **Objective: Indicate promotion methods for co-processing, which is ideal for appropriate treatment /disposal of industrial waste.**
- **Content:**

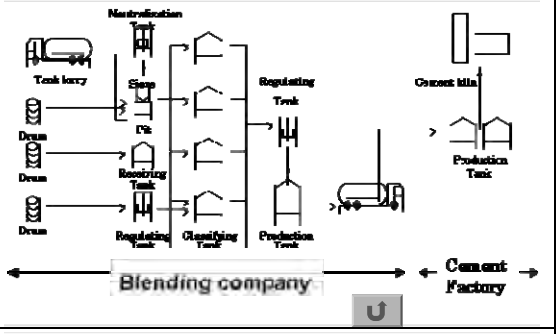
1. **Indicate cement factory treatment and the methods for that.**
2. **In co-processing, it is necessary to foster companies (blenders) that will be able to blend the several kinds of wastes to be accepted by the cement factories.**

20

Measure B2.3. Promote Co-processing (2)



Measure B2.3. Promote Co-processing (3): One blending company providing liquid waste



Approach C. Administration of Industrial Waste Management

C. Strengthen Administration of Industrial Waste Management

- C1. Strengthen Organizational Capacity of IWM
- C2. Improve Management System of Waste Service Companies (WSCs)
- C3. Strengthen Regulations
- C4. Strengthen Cooperation between Administration, Generators and WSCs

23

Measure C1. Administration of Industrial Waste Management

- ☐ **Objective: Strengthening of IPAAM and SUFRAMA**
- ☐ **Content:**

1. **Appoint an officer in charge of IWM at the Environmental Licensing Management Section (GELI) at IPAAM.**
   1. **The IWM officer will work with Information Analysis Management (GEAI) to develop and manage a waste service companies database (WSC_DB).**
2. **SUFRAMA will establish an Industrial Waste Management Group (IWM Group) and officially appoint IWM officers.**
   1. **The IWM officers will work with the IT engineer of CGMOI (Modernization and Informatics General Coordination) and develop a waste inventory database (WI_DB).**
   2. **Analyze the data in the WI_DB and work with IPAAM to submit a PIM IWM Report to IBAMA and the State Public Ministry.**

24

Measure C2. Management System of Waste Service Companies (WSCs) (1)

- ☐ **Objective: Know the WSCs holding environmental licenses and the activities therein and indicate a plan to correct non-licensed companies and activities.**
- ☐ **Content:**

1. **Enter WSCs under the standardized codes.**
2. **Systemize conditions to obtain a license to operate as waste treatment company.**
3. **Instruct WSCs to obtain an operational license:**
   1. **collection and transportation**
   2. **intermediate treatment**
   3. **reuse and recycling**
   4. **final disposal as appropriate with their actual activities.**
4. **Develop a WSC_DB and enter approved companies. Make information on these licensed WSCs available to waste generators.**
5. **Monitor generators against non-licensed WSCs and inappropriate treatment and disposal activities.**

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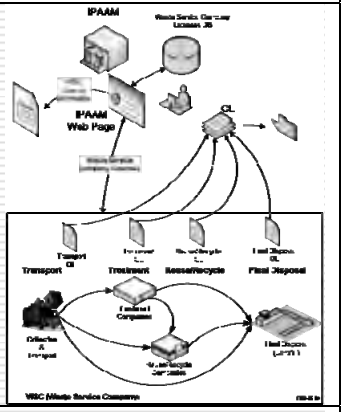
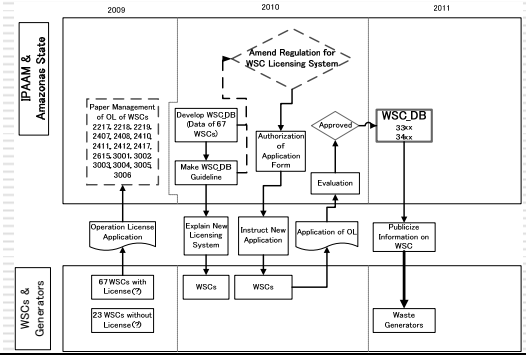
Measure C2. Management System of WSCs (2)



Measure C2. Management System of WSCs (3)



Measure C3. Strengthen Technical and Legal Regulations

- ☐ **Objective: Indicate preventive measures for the inappropriate treatment/disposal.**
- ☐ **Content:**

1. **Make use of the WSC_DB and its licensing and management system to promote regulation against improper treatment/disposal by WSCs.**
2. **Promote regulations against improper treatment/disposal through securing contractual agreements between waste generators and only licensed companies.**

28

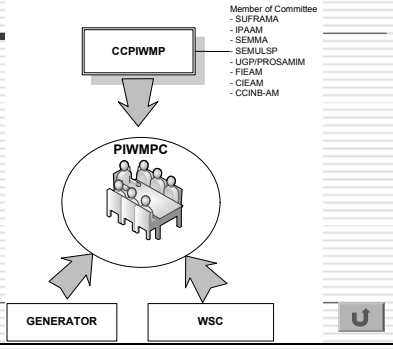
Measure C4. Cooperation between Administration, Generators and WSCs (1)

- **Objective: Make a measure for administration, generators and WSCs to collaborate in order to realize the "establishment of appropriate industrial waste management system".**
- **Content:**

1. **Promote cooperation between administration bodies.**
2. **Promote cooperation between administration and waste generators.**
3. **Promote cooperation between administration and waste service companies (WSCs).**
4. **Strengthen cooperation between administration, generators, and WSCs.**

29

Measure C4. Cooperation between Administration, Generators and WSCs (2)



Approach D. Business Environment for Waste Service Companies

D. Improve Business Environment for Waste Service Companies

D1. Make Manaus Municipal Landfill Fee–based
D2. Regulate Improper Waste Disposal
D3. Publicize, Educate and Train Generators and WSCs
D4. Cultivate Preferred WSCs

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Measure D1. Make Manaus Municipal Landfill Fee-based

- **Objective: Make the Manaus Municipal landfill, which accepts the largest amount of industrial waste, fee-based by collecting a fee necessary for appropriate disposal**
- **Content:**

1. **SUFRAMA in cooperation with IPAAM will work with Manaus Municipality so that a dedicated site for Non-HIW & Non-inert IW can be constructed and make the necessary efforts to achieve construction.**
2. **Once it is constructed, SUFRAMA and IPAAM will work to ensure that Manaus City strictly manages the site to keep municipal waste separate from Non-HIW & Non-inert IW, and also so that a fee is collected to recover the necessary investment and operation costs.**

32

Measure D2. Improper Waste Disposal

- **Objective: Once the administration prepares a system for IWM, indicate a regulation measure against the improper treatment/disposal for industrial waste generators and WSCs.**
- **Content:**

1. **IPAAM will work with SUFRAMA for waste generators to recognize the need for costs corresponding with proper treatment and disposal.**
2. **IPAAM will strengthen its regulation against non-licensed entities.**
3. **IPAAM will strengthen its regulation against improper treatment/disposal by licensed companies.**

33

Measure D3. Publicize, Educate and Train Generators and WSCs

- **Objective: Indicate measure to publicize, educate and train waste generators and WSCs.**
- **Content:**

1. **Actively publicize information on WSCs to waste generators (factories).**
2. **Also, provide training and guidance on technical information to promote the 3Rs in factories.**
3. **Hold seminars for WSCs and provide training and guidance on technical information for appropriate treatment and disposal.**

34

Measure D4. Cultivate Preferred Waste Service Companies

- **Objective: Indicate measure to cultivate preferred waste service companies.**
- **Content:**

1. **Proactively inject good examples from advanced states such as Sao Paulo and improve the business environment for WSCs.**
2. **Consider introducing the system now used by many Prefectures in Japan for "Promotion of Preferred Waste Service Companies".**

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Obrigado por sua atenção!

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2.3.3 Outcomes

Question and Answer Session for 3rd Workshop: April 6, 2010

INDUSTRIAL WASTES ON-SITE MANAGEMENT IN JAPAN (David Rocha Silva)

1-1 It was said both the co-processing and the burning of wastes is done in Japan. A criticism made against co-processing and also the use of wastes as a source of thermal energy (burning plastics, for instance) is the generation of the emission of gases which are eventually source of dioxins and furans, elements which, besides causing cancer, contain CO2 and other greenhouse effect gases. What do the Japanese technicians have to say about that?

ANSWER: *The wastes treatment processes in Japan are strictly monitored by the government (environmental organization). Nevertheless, the waste service companies keep the pollution levels below those demanded by the government. As for the production of greenhouse gases, dioxin and furans, the factories hold a system to treat the gases generated by specific processes. For example, to eliminate the generation of dioxins, the gases of the ovens are abruptly cooled down.*

1-2 Is the cost to properly use the on-site and off-site zero emission methods economically feasible for the companies? There is some incentive from the government to apply such methods as explained, but is that reality really feasible in our city?

ANSWER: In the case of Japan, the feasibility of this process takes place because the disposal in the landfills is too expensive, once the Japanese legislation is too strict. So, it is more economically feasible to invest in research than to implement the 3R policy more and more, thus avoiding high expenses on disposal and/or fines for environmental degradation. This kind of process is not viable in most cases in Brazil.

OFF-SITE MANAGEMENT OF INDUSTRIAL WASTES IN JAPAN (RITA DE CÁSSIA MARIÊ)

2.1- The remaining and the leftovers from the industrial restaurants of PIM are collected as common wastes or used to feed animals (swine).
(*Just a comment, so there is no answer*)

2.2- About the industrial wastes, which ways should be followed for the destination of wastes such as: glass fiber; resin; acetone in our company? (all in small/medium
quantity)

ANSWER: In the case of the acetone, there is an industrial process in Japan to reuse solvents and organic compounds. As for the glass fiber, there is a thermal treatment and the same for the resins, that will depend on the chemical composition of the resin. It is the chemical composition of the resin which will define its treatment system.

ADMINISTRATION OF THE INDUSTRIAL WASTES MANAGEMENT IN JAPAN (ARMANDO BANDEIRA DOS SANTOS JR.)

3.1- What is the destination and/or use of the sludge generated in the landfills and IWM centers? What are the types of analysis employed to those sludge to determine its destination? Who carries those analyses out?

ANSWER: The sludge generated in factories/centers of industrial wastes management is incinerated and the ashes are reused in construction or disposed of in landfills. The landfills generate leachate, which are treated in proper stations and the clean water resulting from the cleaning are disposed of in rivers and lakes. All visited treatment units had their own wastes analysis laboratory, and the selection of the best destination both for solid wastes and effluents may be determined by the results of the technical analysis.

3.2- a) What is the participation of the governmental organizations in making the population aware of the domestic education as for the selective collection?

ANSWER: Japan has few natural resources, what increases the need for reusing the existing ones, and few lands available for the final disposal of wastes in landfills. Because of that and examples of predatory actions against the environment whose recoveries implied in high costs by the government, the local governments encourage the population to adopt positive attitudes towards the selective collection since primary schools up to the awareness campaigns, sometimes with performance incentive/award mechanisms. Besides that, such activity is legal and its non-fulfillment may imply penalties against the violator.

b) What are the incentives offered to the companies in the extent of the governmental benefits, if there is any?

ANSWER: Considering the waste service companies, the incentives may be granted in national, prefectural and/or municipal extent, and they vary according to the place and the complexity of such enterprises as for the treatment plants to be made feasible. Generally

speaking, the official incentives to set up such companies comprehends the lands at subsidized prices, credit/financing in special conditions and the participation of the state education in the qualification of the labor to be employed in that area.

Group 1, Discussion Summary for 3rd Workshop: April 6, 2010

Group 1 – 3rd Workshop of JICA's Study
Industrial Wastes On-site Management
Mediator: David Rocha Silva - SUFRAMA
Relator: Arnaldo Oliveira Neto - SUFRAMA

Suggestions

- Set the Mass Balance (Raw-material x wastes).
- Classify the wastes according to the Market Value.
- Technical personnel (Experts).
- Improved Wastes Inventory.
- Incentive from environmental organizations such as:

Discount over the environmental licensing fee

Discount over other fees

- IPAAM should improve its technical consultancy (Information).
- Improve the in loco technical consultancy at the Generator.
- Standardize the wastes Transport Manifest form.
- Create a codes data base to classify the wastes risk (National and International).
- On line verification system of the applications (IPAAM).
- Post the on-line wastes manifest.
- Set a project for the reuse or recycling of wastes (on-site).
- Forum with the companies to verify the good practices (recycling) implanted.

Suggested title: "Forum of Sustainable Wastes Management Good Practices in PIM". Suggest it is implemented by SUFRAMA.

- Integrated policies among the companies of the same production sector.
- Add the Environmental Education as a subject for the State Schools, both for Primary and High School.
- Incentive for the companies to implement the ISO 14000.
- Inclusion of the Industrial Wastes Management Master Plan of Manaus Industrial Pole in the governmental political spheres (Federal and State).

Group 2, Discussion Summary for 3rd Workshop: April 6, 2010

Group 2 – 3rd Workshop of JICA Study
Industrial Wastes Off-site Management

Mediator: Rita Mariê - SUFRAMA
Relator: Mônica Barros - SUFRAMA

It was discussed on:

- The need to create an attractive environment to render wastes services.

- The group understands as valid the application of ISO14001 and highlights the need of attention towards the difficulties of some companies (small and medium) to fulfill it.

- Needs of more efficient monitoring of the wastes services companies to incentive the regularization of the non-licensed companies.

- Issues on how to strengthen the market for the wastes service companies. Concern with the lack of licensed companies to treat the wastes which must be correctly disposed of.

- Recognition of the usefulness of the data base as a tool to make the wastes management viable and recognition of the wastes as raw-material.

- Preoccupation with the monitoring by IPAAM.

- Need to monitor the information input in the data base of the WSC. Discussion on the resources of the monitoring organization of those companies.

- SUFRAMA needs to take a more favorable posture to adequate the companies as for the management of their wastes, as well as the strengthening of the work of IPAAM.

- Suggestion to include among the requirements to be granted with the tax incentives concerning the environmental issue. Hold partnerships with institutions such as SENAI and UFAM to train/qualify in recycling and reuse.

Group 3, Discussion Summary for 3rd Workshop: April 6, 2010

Group 3 (debates and suggestions) – 3rd Workshop of JICA Study
Industrial Wastes Master Plan of PIM and improvement of the environmental legislation
Mediador: Antônio Ademir Stroski - IPAAM
Relator: Armando Bandeira Jr. - SUFRAMA

- Mr. Fúlvio Stelli Loreni (recycling of boards and integrated circuits) – The tax levy for the recyclers is high; proposes a joint work of the generator with the WSC. Reverse logistics (case of Phillips): actual try of reception and reuse nuclei; entities involved in the process: consumers, government, Banks and industries.

- Mr. Waldir Eugênio (Nippon-Seiki) – Costs with energy in PIM should be reduced. Partnership between the government and recycling companies to strengthen the market.

- Mr. Fernando (Amazon Sand) – Need to previously publicize the Master Plan.

- Mr. João Pedro (Environmental Analyst of MMA) – On the Solid Wastes National Policy. It was approved in the Congress, is under evaluation of the Senate. Still has no final text.

- Mrs. Sandra Márcia (Panasonic) – Meeting on the destination of the wastes are regularly held with other generators in the Japanese-Brazilian Chamber. Lack of definition on the destination (whether in agreement with the legislation) concern the factories, for they may imply in environmental liabilities for them. It is necessary a higher divulgation of the credibility of the WSC working in the local market.

- Mr. Haddad (JICA Team) – Recognizes the quality of the wastes treatment services in PIM should be improved. The market should be disciplined in relation to the validity of recommendable treatment techniques, with prices compatible to the level of the services, just like in Japan. That will happen with the elimination of the non-licensed WSC and with a better support to reliable and capable investors who fulfill the demands of responsible factories.

- Mr. Juvino (Whirlpool) – The Brazilian legislation is not faulty. Reverse logistics of refrigerators has been successfully accomplished in South Brazil. In Manaus, it is practically inexistent, due to the lack of an industrial landfill (final destination). It is necessary to create favorable conditions for the development of an internal market for that action, instead of discussing on the creation of laws. IPAAM has been looking for solutions in that sense.

- Mr. Fúlvio - Distinction among dischargers. Differences among wastes services offered: some companies offer several services at a low cost, without concerns whether they are acting according to the environmental legislation.

- Mr. Juvino - The factories look forward to reconciling cost-benefit with environmental responsibility.

- Mr. Fúlvio - The 3R has been done more in the extent of the factories, but it should begin in the domestic sector. A better education in that sense should be developed.

- Mrs. Sandra Márcia - Updating of information related to the WSC in the website of IPAAM would be valuable to the industries.

- Mr. Stroski - The Database of the WSC helps that issue.

- Mr. Juvino – What will the industries as a benefit from IPAAM if they get the Certification ISO 14.000?

- Mr. Stroski - That would help the industries of PIM to reach the excellence level already enjoyed by the Japanese factories regarding the environmental responsibility.

- Mr. Antônio Botelho (SUFRAMA) – We do not have at the moment an administration forecast from SUFRAMA for tax incentives for the factories holding the Certification ISO 14.000.

- Mr. Juvino - As a recommendation for the Study of JICA and to SUFRAMA, the ISO 14.000 could be stimulated as an objective of possible tax incentive to implant or as a condition for the approval of the Basic Productive Process, as it happens with to ISO 9.000.

- Mr. Fúlvio – Is there a forecast for the creation of incentive instruments for the WSC managing hazardous wastes by SUFRAMA?

- Mr. Renato Freitas (SUFRAMA) - That could be a discussion point for the Master Plan. It was reminded that last month, an allusive work was presented about the productive of the paper recycling chain in PIM, a project by UFAM with the support of SUFRAMA.

- Mrs. Katherine (PhD in Biotechnology in UFAM - Incentive of partnerships between the academia and the industries of PIM to strengthen and make possible the use of the wastes generated as raw material for other processes. For that, the Biotechnology can be an important tool.

- Mr. Pedro Sosa (Fucapi) – Fostering of research and technological innovation in the companies addressed towards the wastes management. Participation of the universities in the process of innovation of the WSC.

- Mrs. Sandra Maria - Was the survey of the recycling companies done in the area of the Study of JICA? Panasonic does its own wastes manifest (destination).

- Mr. Haddad - The Study surveyed all the generators and WSC of PIM. Regarding the last ones, a lot of WSC were found without license. Some of them don't have the legal concerns that would be necessary, with what it was concluded that the current situation of that market in Manaus is critical. Then it seems that the idea of the creation of the Database, aiming for giving prestige to the companies that are regular and to stimulate the inadequate companies to be legalized and modernized. The example is the blending of wastes for co-processing, practically inexistent in the local market.

- Mr. Fernando – There should be a previous treatment before the disposal of industrial wastes in the landfill as a form of allowing the collection for the service in bearable levels for the factories due to the decrease of the volumes.

- Mr. Botelho - The adoption of successful practices in other countries is an advisable practice, however it demands time (Japan began its efforts towards the environmental excellence about 50 years ago) and the particularities and the progresses already reached by each society in that matter should be taken into account. It is fundamental to exercise a sociological reduction when applying imported practices.

- Mr. Juvino - Suggestion of partnerships with the government and private companies in the sense of assisting the customers of the products/services of the factories/WSC in the management of wastes installed in PIM.

- Mr. Haddad - SUFRAMA accomplishes its incentive role and the wastes management market in Manaus should be adjusted in accordance the market supply and demand. But the current quality of the rendered services is bad and that scenery needs to be modified, with improvements in the attendance and in monitoring of the activities by IPAAM, with the support of SUFRAMA. It is important to stand out that there are WSC which already have excellent level in Manaus. However, with a more strengthened market, all will win.

- Mr. Mauro Jansen (Environment Commission of the Congress of Amazonas) – Those in charge of the on-site wastes management in the factories have the obligation to have qualification for that, as well as a university degree. Forecast of cares and relative control of the quality of the air. Laws to motivate the reverse logistics, diversifying the recycling market. The final destination in the landfill should be rated at a fair price.

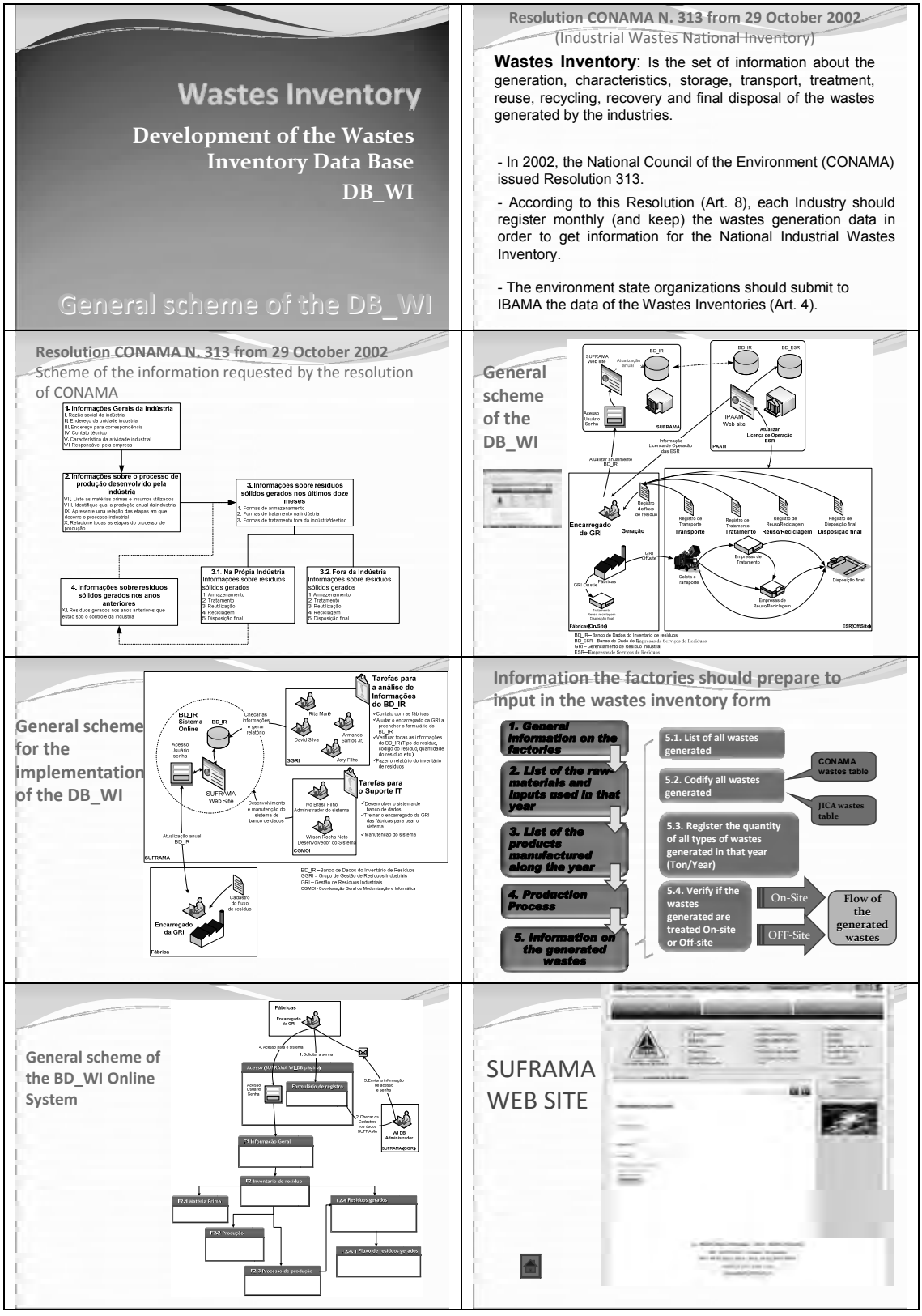
- Mr. Hernan Valenzuela (SUFRAMA) - It is important to begin the approach of the recycling by taking into account the sceneries that motivated this practice in Japan and in Europe. Starting from this point of view, it should be built linked to complementary actions for the generation of renewable energy, environmental education and obligation of the industry to adopt ISO 14.000.

- Mr. Roderick Castello Branco (economy consultant) – Wrote a master's degree essay on the possibility of transformation of PIM into an Ecological Industrial Pole of Manaus. It proposes a new form of seeing the industrial wastes by using the concept of industrial symbiosis: wastes are raw material out of the place. Today, we are discussing the treatment of already generated wastes. Maybe in the future we should worry about the non generation of that waste, passing from a highly expensive treatment to an industry truly sustainable one.

2.4 Waste Inventory Database Seminar

2.4.1 Presentation Materials

Presentation for Waste Inventory Database Seminar (April 7, 2010)



1. General Information on the factories

Campo	Dado	Observação
CNPJ:	00.000.000/0000-49	
Inscrição Suframa	00.000-000	
Razão Social	Empresa 1	
Endereço para correspondência:		
Logradouro/nº	Av. Solimões, 000 – Distrito Industrial	
Bairro/Distrito:	Distrito Industrial	
Município:	Manaus	
CEP:	00.000.000	
Telefone:	(92)0000-0000	
Contato técnico:		
Nome:	Tecnico 1	
Cargo:	Coodenadora de Residuos Industrial	
E-mail:	tecnico1@empresa1.com.br	
Telefone de:	(92)0000-0000	
Fax:	(92)0000-0000	
Características da atividade industrial:		
Atividade principal da indústria:	Fabricação de produtos de papel, cartolina, papel-cartão e papelão ondulado para uso comercial e de escritório, exceto formulário contínuo	
Código CNAE:	1741-9/02	Consulte a tabela da CNAE
Latitude	30°07'38.24"S	Medição GPS Grado/Min/Sec
Longitude	60°02'30.43"W	Medição GPS Grado/Min/Sec

2. List of raw materials

ID	Matéria Prima e insumos	Quantidade atual (por ano)	Capacidade Máxima (por ano)	Unidade de Medida
1	Insumos 1	20	100	Ton/ano
2	Insumos 2	30	100	Ton/ano
3	Insumos 3	40	100	Ton/ano
4				
5				
6				

3. Factory annual production

	ID	Produtos	Quantidade atual (por ano)	Capacidade Máxima (por ano)	Unidade de Medida
1	1	Produto 1	100	150	Qnt
1	2	Produto 2			
1	3	Produto 3			

4. Production Process (generation)

	ID	Processo Produção	Descrição	Observação
1	1	Não	LIXO EM GERAL	100
1	2	Sim	Produto 1, linha 1 etapa 2	
1	3	Sim	Produto 1, linha 1 etapa 3	

4. 5.1. List and codify all wastes generated

No.	Descrição	Codigo CONAMA		Codigo JICA	
1	LIXOORGÂNICO	A001	Resíduo de refeitórios	NH01	Resíduo de cozinha (restos de animais tais como ossos, pele e pêlos)
2	PAPEL/PAPELÃO	A006	Resíduos de papel e papelão	NH03	Papel
3	MADEIRAPALLETS	A009	Resíduos de madeira sem substâncias tóxicas	NH02	Madeira
4	METAISFERROSOS	A004	Refugo de metais ferrosos	NH09	Metais e ligas de metais como alumínio, cobre e bronze.

CONAMA wastes table

JICA wastes table

5.3. Register the quantity of all types of wastes generated in that year

Single unit (Ton/Year)

No.	Descrição	Codigo CONAMA		Codigo JICA		Quantidade (Ton/ano)
1	LIXOORGÂNICO	A001	Resíduo de refeitórios	NH01	Resíduo de cozinha (restos de animais tais como ossos, pele e pêlos)	100
2	PAPEL/PAPELÃO	A006	Resíduos de papel e papelão	NH03	Papel	200
3	MADEIRAPALLETS	A009	Resíduos de madeira sem substâncias tóxicas	NH02	Madeira	50
4	METAISFERROSOS	A004	Refugo de metais ferrosos	NH09	Metais e ligas de metais como alumínio, cobre e bronze.	1,000
					Total	1,350

5.4. Verify if the wastes generated are treated On-site or Off-site

No.	Descrição	Codigo CONAMA		Codigo JICA		Quantidade (Ton/ano)
1	LIXOORGÂNICO	A001	Resíduo de refeitórios	NH01	Resíduo de cozinha (restos de animais tais como ossos, pele e pêlos)	100
2	PAPEL/PAPELÃO	A006	Resíduos de papel e papelão	NH03	Papel	200
3	MADEIRAPALLETS	A009	Resíduos de madeira sem substâncias tóxicas	NH02	Madeira	50
4	METAISFERROSOS	A004	Refugo de metais ferrosos	NH09	Metais e ligas de metais como alumínio, cobre e bronze.	1,000
					Total	1,350

				Transporte			Tratamento			Reciclagem			Disposição final			Armazenamento				
A005	N001	100	Off	100	100									802	100					
A006	N003	200	On	50	-		T12	50		R13	50			-						
			Off	150	150			-		R99	150			-						
A009	N002	50	Off	50	50			-			-			802	50					
A004	N009	1,000	On	100	-		T34	-			-			-			508	100		
			Off	900	900		T34	900			-			802	900					
Total		1,350	On	150	-			50			50			-				100		
			Off	1,200	1,200			900			150			1,050				-		

ID	Descrição
101	Incinerador
102	Queimador de Câmara
103	Queima a céu aberto
104	Autoclave
107	Destruição de cianeto
108	Descarga/lavagem/lixiviação química ou neutralização
109	Oxidação química
110	Precipitação
111	Detoxificação
112	Neutralização
113	Adsorção
114	Tratamento biológico
115	Compostagem
116	Pré-lagem
117	Transferência*
118	Plasma térmico
124	Outros tratamentos (especificar)

ID	Descrição
201	Utilização em forno industrial (exceto cimenteiras)
202	Utilização em cimenteiras
203	Co-processamento em fornos de cimento
204	Formulação de "blend" de resíduos
205	Utilização em formulação de concreto/asfalto
206	Incorporação em solo agrícola
207	Fertilização
208	Ração animal
209	Reprocessamento de solventes
210	Re-refino de óleo
211	Reprocessamento de óleo
212	Recuperação metalúrgica
213	Reutilização/reciclagem/recuperação - diversos
299	Outras formas de reutilização/reciclagem/recuperação

ID	Descrição
301	Infiltração no solo
302	Aterro Municipal
303	Aterro Industrial Próprio
304	Aterro Industrial - terceiros
305	Lixão Municipal
306	Lixão Particular
307	Vazio de Esgoto
330	Outras (especificar)

ID	Descrição
401	tambor em piso impermeável, área coberta
411	tambor em piso impermeável, área descoberta
421	tambor em solo, área coberta
431	tambor em solo, área descoberta
501	a granel em piso impermeável, área coberta
519	a granel em piso impermeável, área descoberta
521	a granel em solo, área coberta
532	a granel em solo, área descoberta
593	caçamba sem cobertura
513	caçamba sem cobertura
504	fardos com bacia de contenção
514	tanque sem bacia de contenção
595	bombona em piso impermeável, área coberta
515	bombona em piso impermeável, área descoberta
545	bombona em solo, área coberta
555	bombona em solo, área descoberta
516	tanque sem impermeabilização
598	baias sem impermeabilização
599	outros sistemas (especificar)

Flow of the generated wastes