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## QUESTIONS TO BE DISCUSSED AT THE STAKEHOLDER CONSULTATION MEETING

8 SEPTEMBER 2005

### **FNADE ANSWER**

## 1. Mercury waste flows in your country?

### 1.1. Total amounts in your country? What kind of waste and what is the mercury content?

The major mercury waste registered in France are the following :

- **TWDQ** (Toxic Waste in Dispersed Quantities), including mercury dental amalgams, thermometers, CDO (Chemical Demand of Oxygen) measurement kits, and laboratory chemical products, for a total amount evaluated to 110 T per year (*Inventory and prospects for collection and management of toxic waste in dispersed quantities (TWDQ) in France – final report – sept. 2004 – ADEME*) :

Mercury waste from dental amalgams (15 to 20 T / year of mercury) is composed of 50% of mercury and 50% of alloy. They are divided in two types of waste : wet waste made of amalgam mud, and dry waste made of the solid parts of amalgam (*ASTEE Report – working group " mercury waste from amalgams " August 5 2005*).

This waste is never mixed with the hospital waste. They are collected by specialized companies and are followed up with forms (*Contact with French Dental Association*).

Mercury thermometers are estimated to 12 millions units still present in households (24 T of mercury), bound to be replaced by infra-red or electronic thermometers. The replacement rate of mercury thermometers in hospitals is about 10 percent a year since 1998.

A significant volume of mercury is currently trapped in the waste water pipes of hospitals. This phenomenon was identified after interventions on drains in these hospitals.

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CDO measurement kits contain mercury compounds.

Laboratory chemicals also contain mercury compounds.

- **WEEE** (Waste of Electric and Electronic Equipment) represented by electric power equipments, batteries and accumulators, barometers and lamps and fluorescent tubes :

Many electric power equipments are equipped with switches known as containing mercury (e.g.: electric transformers).

The layer of batteries and accumulators is about 24 470 T per year. The concentration is falling down regularly (from 250 ppm in 1998, to about 40 to 70 ppm in 2005) (*Inventory and prospects for collection and management of toxic waste in dispersed quantities (TWDQ) in France – final Report – sept.2004 – ADEME*).

Barometers resulting from households represent a stock of 440 000 units in France, which is equivalent to 4 T of mercury per year (*Senate Report n°261 – April 2001*).

47 million of lamps and fluorescent tubes containing mercury are rejected each year. That corresponds to mercury values from 2 to 3 T per year (*Senate Report n°261 – April 2001*).

- Waste from **chlorine and soda production**. It is the most significant layer according to the SHD (Trade union of Halogens & Derived). Mercury cathode cells represent in France the equivalent of 3 to 4000 T of mercury, which, if a change in manufacturing process of chlorine is essential, will be to eliminate. Solid rejections are evaluated to 25 T, from which 20 T are recycled in-site and 5 T end in storage centres for dangerous waste, with concentrations of about 40 to 100 mg/kg. 2 to 2,5 T of mercury are rejected into environment (water, air) (*Senate Report n°261 – April 2001*).

- **Gold production**. In spite of prohibition, some gold washers in Guyana still concentrate gold by producing mercury amalgam, then operating distillation in the open air.

- **Soils polluted by demolition**, and **residues** from dismantlement and demolition of units producing chlorine and soda and other chemical products.

## **1.2. Amounts recycled? What kind of waste and what is the mercury content?**

The only issue for mercury waste management of dental amalgams is recycling. Such waste, once collected, undergoes a separation process so as to dissociate the mercury from the alloy. Mercury can then be re-used. Only two sites in France are able for this operation (*Contact with French Dental Association*).

Until 1998, the lamps and fluorescent tubes ended in tips, as a banal waste compared to household refuse, and generated nearly 1 T of mercury and 250 T of fluorescent powder, with a significant impact on environment. This situation changed in 1998, since the decree n° 97-517 classes the lamps containing mercury as dangerous waste. This waste thus is now processed by sorting glass, metals, mercury and powders.

Approximately 9200 T of batteries and accumulators were recycled in 2003. Yet, they do not all contain mercury (*Report 2003 of the Observatory for batteries and Accumulators*).

### **1.3. Amounts landfilled? What kind of waste and what is the mercury content?**

Soils and residues coming from dismantling of factories polluted with mercury, resulting from old industrial sites are eliminated through dangerous waste storage centres, when the mercury content level allows it.

Depending on this content level, it is either driven to a TLC (Technical Landfilling Center) of class 1 in France, or in salt mines.

### **1.4. Amounts incinerated? What kind of waste and what is the mercury content?**

Mercury waste are not accepted in incineration centers. Therefore mercury's presence is hazardous, or brought with dangerous waste coming from household waste, or from TWDQ driven in household waste flow.

### **1.5. Amounts exported for recovery to other OECD countries? What kind of waste and what is the mercury content?**

Exported mercury waste is almost exclusively demolition waste stored in salt mines in Germany.

In 2003, 287 T of alkaline and salt batteries were also exported.

## **2. Mercury recycling and processes with mercury as a by-product in your country? E.g. recycling of mercury in batteries and thermometers, mercury as a by-product from mining and production of other metals, and from cleaning of natural gas.**

### **2.1. Amounts of mercury from these sources? In which form, metallic mercury or as a mercury compound?**

### **2.2. Considered as waste or a product? If waste, how is it managed?**

The mercury recovered from separation process is generally sent to chlorine manufacturing units.

### **3. Which effects could be expected on the recycling industry in your country by a export ban for mercury and storage requirements for surplus mercury?**

The day mercury export won't be possible anymore, with the stop of electrolysis by mercury units, it will become compulsory to allow the storage of the last stocks of metal mercury, in a form to be defined.

### **4. How much mercury is used today in your country for products, amalgam etc? Will this change in the future? Estimated amounts needed after the export ban has entered into force (Commission proposal 2011)?**

In France, 35 T of mercury are still used annually for amalgams production (*Piren-Seine report 2004 – mercury in France in the XXth century: uses and forecasts*).

With the stop of electrolysis by mercury units, mercury volumes used by other applications may be seen as insignificant.

### **5. Do you have national legislation that goes further than the European legislation and that need to be considered while developing this new legislation?**

#### **5.1. Restrictions for landfilling of waste containing mercury**

In addition to the European regulation on waste acceptance in storage centers, the "quality chart for waste storage traders" of FNADE specifies the maximum concentrations admitted.

#### **5.2. Restrictions for incineration of waste containing mercury**

The regulation on rejections restricts the entry of mercury waste in incinerating process.

#### **5.3. Restrictions for export of waste containing mercury**

There is no restriction.

#### **5.4. Treatment requirements for waste containing mercury before landfilling/incineration**

Stabilization by hydraulic binders on the leachable fraction for storage in TLC, in respect of regulation limits.

Solidification for storage in salt mine.

#### **5.5. Special requirements for landfilling of mercury**

The OGMR (Office of Geologic and Mining Research) elaborated "guide values" in order to determine if the pollution levels on soils require a treatment.

These guide values are related to the DVSS (Definition Values of Source-Soil), which correspond to the background noise, and the VIR (Values of Impact Report), which correspond to the limits over which process of depollution is justified.

These guide values for mercury are the following :

##### SOIL Values :

DVSS = 3,5 mg/kg dry mass

VIR sensitive use < 7 mg/kg dry mass

VIR non sensitive use < 600 mg/kg dry mass

##### WATER Values :

VIR sensitive use < 1 µg/l

VIR non sensitive use < 5 µg/l