

Laboratory waste management

Identification | Classification | Temporary storage

EcoDeal Presentation (April 18, Auditorium, 10:30)

EcoDeal presentation was prepared to show what type of waste is generated at ITQB, the main groups of classification and which type of container should be used for temporary storage. It was an opportunity to clarify specific doubts concerning laboratory waste segregation and treatment. Legal framework (PT and EU) was included to support description of waste management.

Legal framework

DL 73/2011 (17/6), Portaria 335/97, DL 19-A/2014, Directive 2008/98/CE and Decision 2014/955/EU

- Reduce the waste production and the impact of waste management regarding its hazardous characteristics
- Reduce resources consumption and improve use efficiency
- Human health and environment protection
- ADR Regulations – Carriage of dangerous goods by road

Waste identification, temporary storage packing and treatment unit destination*

- Acid solutions (25 L jerrican) – high concentration; non-flammable; destination UTFQ
- Base solutions (25 L jerrican) – high concentration; non-flammable; destination UTFQ
- Halogenated solvents (25 L jerrican) – flammable; destination UTRO
- Non-halogenated solvents (25 L jerrican) – flammable; segregate aromatic solvents; destination UTRO
- Old laboratory reagents and chemical remaining fractions – original containers or flasks (preserve label if possible); destination UCTT
- Contaminated laboratory glass (200 L – drums) – can be delivered in cardboard boxes covered with plastic bag or wide mouth plastic containers; destination UEST
- Fixer reagent (25 L jerrican) – destination UTFQ
- Developer reagent (25 L jerrican) – destination UTFQ
- Ionic exchange resins (25 L/200 L drum) – destination UEST
- Laboratory effluent without Hg and Ethidium Bromide contamination (25 L jerrican) – destination UTFQ
- Laboratory effluent with metals; Cr < 2g/l, without Hg and As (25 L jerrican) – destination UTFQ
- Aqueous effluents with Hg; COD determination (2-5 L jerrican – adapted to the volume of solution) – destination UCTT
- Metallic mercury (small flask) / Equipment containing Hg (packed to avoid spills) – destination UCTT
- PPE's (lab material, gloves, masks, etc.) and contaminated lab materials (200 L drum) – destination UEST
- Flasks and other containers contaminated with hazardous products (200 L drum) – destination UEST/UVEC

* See EcoDeal Treatment Units description at the end of document.

Waste segregation

- Chemical compatibility properties – check MSDS and chemical compatibility table before mixing
- Same type of final residue treatment at the Waste Management facility
- Laboratory waste for incineration:
 - Reagents and solutions containing mercury, arsenic, formaldehyde, aromatic hydrocarbons, COD kits, alkaline metals, Cr VI salts, pesticides, ethidium bromide, isocyanides and pyridine.

Waste Treatment Costs

If waste segregation is done inaccurately it can increase the costs of added value operation or even prevent treatment by EcoDeal leading to incineration as a final destiny. Portugal does not have dedicated incineration plants, so this type of waste is always shipped to foreign countries.

Waste treatment costs comparison:

- Halogenate solvents = **4 X** non-halogenate solvents
- Incineration = **8 X** treatment at EcoDeal facility

Chemical incompatibility table

Check at ITQB “Safety” page (it can be used for storage at the lab and waste segregation)

Waste packing for transport

Waste should be packed in well preserved containers, closable to prevent leaks or spills and with adequate design to the type and volume of waste intended for.

- Liquid waste: 25 L jerricans (2 L or 5 L jerricans can, also, be used)
- Solid waste: 30 L, 60 L or 200 L drums
- Old or rejected lab reagents: packed in leak retaining boxes (standard size, plastic box)

Labeling

ITQB has an internal labeling system for lab waste identification and classification. Self-sticking labels can be requested at the Maintenance department. Follow the rules described at ITQB’s Safety manual for lab waste delivery.

Waste treatment units at EcoDeal

EcoDeal accepts all types of waste with the exception of infectious (biological contaminated waste), radioactive and explosive substances. Prior to admission to one of waste treatment units, all waste collected by EcoDeal is characterized by a highly trained technician and tested at the analytical lab.

EcoDeal waste treatment units:

- UCTT – Classification, segregation and transfer unit – final packing and temporary storage of dangerous goods to be shipped for incineration
- UPCA – Alternative combustion fuels unit – lab tested dangerous wastes mixing for energetic added value operations (incineration or co-incineration)
- UTRO – Aqueous solutions with high organic concentration treatment unit – physical/chemical treatment of sludge leading to fraction separation and recovery of valuable resources (water can be used by farmers for crops watering, e.g.)
- UTFQ – Physical/chemical treatment unit – pre-treatment of solutions leading to fractions that can be send to other treatment units or disposed in a controlled landfill
- UVEC – Contaminated containers valuable unit – decontamination and separation of containers for material recycling
- UEST – Unit for treatment of industrial waste in order to prevent environmental contamination
- UDS – Soil decontamination unit
- ATERRO – Controlled landfill for deposition of treated solid waste