



PROMOTING INNOVATION IN THE GREEN ECONOMY IN LATIN AMERICA AND THE CARIBBEAN BY INCLUDING QUALITY INFRASTRUCTURE

Hazardous Waste Management

Context:

- The Problem(s)
- Global GE Perspective

Hazardous waste is a waste with properties that make it dangerous or capable of having a harmful effect on human health or the environment. It is generated from many sources, ranging from industrial manufacturing process wastes to batteries and may come in many forms, including liquids, solids gases, and sludges. Examples of hazardous waste include: asbestos, chemicals, brake fluid or print toner, batteries, solvents, pesticides, oils (except edible ones), e.g. car oil, equipment containing ozone depleting substances, e.g. fridges, hazardous waste containers.

Adequate management of hazardous waste is challenging due to special measures needed to be taken during different stages of its life cycle including: generation, transportation, storage, recycling, treatment, and disposal

The perils surrounding this type of waste result in it being heavily regulated. There are several international conventions that regulate hazardous waste management. One of the most relevant conventions is the Basel Convention (1992), which regulates the transboundary movement of this type of waste and its disposal. Ratifying countries commit to:

- Minimise the generation of hazardous waste;
- Ensure adequate disposal facilities are available;
- Control and reduce international movements of hazardous waste;
- Ensure environmentally sound management of wastes; and
- Prevent and punish illegal traffic.

The convention seeks that appropriate knowledge of the type of waste to be handled, and understanding of the health and safety implications of managing it, is present when exporting and importing hazardous waste, especially when it is imported into developing countries.

There are also conventions regulating specific types of hazardous waste, such as the Stockholm Convention on Persistent Organic Pollutants, 2001 (POPs) and the Minamata Convention, regulating mercury.

Situation in Latin America and the Caribbean

- Leading countries in LAC

Work on hazardous waste has been going on in different LAC countries for over a decade¹. In terms of the Basel Convention, a lot of it is done through Basel Convention Regional Centres (BCRCs). The primary mechanism for assisting in the implementation of the Basel Convention and its obligations is a series of Basel Convention Regional Centres for Training and Technology Transfer (BCRC). Established across the world under Article 14 of the Convention, these Centres are meant to provide for the effective implementation of the Convention at the national to regional levels.

In Latin America, these Centres are located in Argentina (for South America), El Salvador (for Central America and México), in Trinidad and Tobago (for the Caribbean) and in Uruguay (for LAC).

¹ <http://www.basel.int/default.aspx?tabid=2346>



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Some relevant examples of leadership for hazardous waste management in LAC are:

- Costa Rica has implemented regulation and a national system for managing hazardous waste².
- Colombia³ has developed guidelines regarding hazardous waste.
- Mexico is implementing a program with the US, which includes goals to reduce and prevent land contamination through strengthened waste management⁴.

Links to QI:

- Relevant standards (ISO)
- QI service gaps

There are a series of standards regarding hazardous waste, which ISO categorizes as special waste (which include radioactive waste, hospital waste, carcasses, and other hazardous waste). Several of them can be consulted [here](#).

One particular link for QI that has been detected through this project is the management of hazardous waste generated in laboratories. In QI labs, waste could be chemical, biological and even radioactive. This waste should be adequately managed according to its properties and characteristics. Adequate management of each of these types of waste will also depend on each country's regulation and waste management infrastructure/facilities.

In ISO 17025, there is no mention about waste management whatsoever. In 15189 there is a requirement for a safe disposal of samples, that "shall be carried out in accordance with local regulations or recommendations for waste management". In terms of standardization, there is an opportunity for incorporating a requirement for adequate waste management in ISO 17025 to start homogenizing QI laboratories' practices regarding waste management. There should be a requirement to ensure the traceability of hazardous waste after its disposal, and for disposal procedures to comply with local regulation at the least.

There is also an opportunity at the regional level to identify a baseline scenario of hazardous waste management in QI laboratories⁵, and if necessary, to develop skills, knowledge, strategies and protocols/procedures/guidelines for the adequate management of each type of waste. These types of guidelines are common in other countries (see some examples in the bibliography) and might already be present in many of the QI labs in the region, however this must be verified in order to determine the actions that should be taken in order to improve the situation (if necessary).

² <http://sigrep.minae.go.cr/pag/principal.php>

³

http://www.minambiente.gov.co/images/AsuntosambientalesySectorialyUrbana/pdf/sustancias_qu%C3%ADmicas_y_residuos_peligrosos/gestion_integral_respel_bases_conceptuales.pdf

⁴ <https://www.epa.gov/border2020/goals-and-objectives#goal3>

⁵It could look something similar to this one carried out in Brazil: <http://cdn.intechopen.com/pdfs-wm/16297.pdf>



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(Preliminary)
Conclusions

There is still the need to strengthen capacity and knowledge regarding hazardous waste, especially in developing countries such as LAC countries, where activities such as mining and industry are still relevant economic activities. International conventions and frameworks pose opportunities for collaboration and knowledge sharing between countries and at the regional level.

Hazardous waste management in labs is seen as a good starting point in bringing together QI and green economy goals.

Bibliography
and links

Dayo et al. (NA). *International Issues in Hazardous Waste Management*. In *Hazardous Waste Management*.

<http://www.eolss.net/sample-chapters/c09/e1-08-02-00.pdf>

Relevant links:

-UNEP:

<http://www.unep.org/chemicalsandwaste/>

<http://www.unep.org/gpwm/FocalAreas/HazardousWasteManagement/tabid/1060992/Default.aspx>

-OECD:

<http://www.oecd.org/environment/waste/>

-EPA:

<https://www.epa.gov/hw/learn-basics-hazardous-waste>

-GEF:

<http://www.thegef.org/topics/chemicals-and-waste>

-INECE:

<https://inece.org/topics/category/3>

Laboratory Waste Management Examples:

<http://epa.ohio.gov/portals/32/pdf/ManagingHazardousWasteFromLaboratories.pdf>

<https://www.epa.gov/hwgenerators/regulations-hazardous-waste-generated-academic-laboratories>

http://www.ehrs.upenn.edu/media_files/docs/pdf/wastesectionupdatefinal.pdf

<https://www.st-andrews.ac.uk/staff/policy/healthandsafety/publications/waste/waste-disposaloflaboratorywastesguidance/>