

QSE Assessment Questions and Answers

This section reviews some of the necessary questions to be asked related quality, safety, and environmental (QSE) aspects. Currently, ICRC uses a set of questions and a rating method to assess the QSE appropriateness of its suppliers (QSE Company Assessment Form). This section will not repeat the questions that were already addressed in the form. Nor it provides a comprehensive list of QSE-related questions for all the products.

This document aims to provide the critical questions that need to be asked during a QSE assessment. These questions are based on the results of the environmental study ‘**Sustainable Management of ICRC’s Garage Waste**’.

The possible or ideal answers are provided. These questions can be added to the current QSE Company Assessment Form, to help ICRC staff evaluate the sustainability of waste management options and assist them in the decision-making process.

Before moving to company assessment, it is recommended that for all waste types, the QSE assessment asks the ICRC staff “*how do you manage the waste?*”. Currently, limited information is available about how ICRC deals with different types of waste across different delegations. The answers can sketch a better picture of what happens to garage waste immediately after they are generated.

Used Oil

The relevant questions and answers for used oil are as follows:

- Which materials are recovered and which materials are wasted at the end of the re-refinery?

Possible answers: Re-refining final product is “recycled lube oil” for market provided that upgrading base oil happens on site at the final stage of mixing with additives to improve its characteristics. If this stage does not exist, the only recovered product is “base oil” which is the recovered oil from the re-refining process after distillation and bleaching. Base oil usually requires further enhancement before being sold in the market and use in automobiles.

Possible byproducts: diesel, gasoline, bitumen

Possible wastes: oil saturated clay (only if the re-refinery uses an activated bleaching clay treatment)

- What measures do you take to control the emissions?

Ideal answer: Processes like distillation which occur at high temperatures and high pressure should be done under controlled conditions and monitored for potential emissions to air (e.g., heavy metals and volatile organic solids) that can be released under these extreme conditions. Furthermore, if thermal energy is to be produced on site to feed the distillation unit, flue gas treatment for the incinerator should exist. Components of the flue gas treatment system can vary according to the type of fuel used.

- What source of energy do you use for your recycling process?

Possible answers: Renewable energies (highly preferred), natural gas (preferred), light fuel oil (less preferred), and coal (least preferred). As for electricity, if taken from the grid, choosing the electricity that is certified to be renewable, where possible. As for the thermal energy, which is usually produced by the facility internally, cleaner sources like natural gas are preferred.

- How do you transport used oil?

Ideal answer: Train, where railway is accessible. Sealed tanker trucks, for road transport.

- What do you do in case of oil spillage? (This question applies to ICRC staff too, if they store any used oil)

Ideal answer: Handle the spilled oil as a hazardous waste. Oil leaks and spills must be dealt with it immediately as it could cause a serious pollution. If you can safely stop the flow of oil do. Put a bucket under the leak and close valves or taps. Use leak sealing putty from your leakage prevention kit to cover the leaking area, wear rubber or vinyl gloves to protect your skin. For plastic tanks you may be able to temporarily stop the leak by rubbing a bar of soft soap across the leak.

Use the contents of leakage prevention kit or sandbags to absorb the spilled oil if it's on a hard surface and stop it entering a river, stream, drains or soaking into the ground. Never wash any spilled oil away into drains or into the ground as most drains connect to watercourse. Never use detergents to clean up spilled oil as it could cause a worse pollution incident. The detergent itself is a pollutant and mixes oil into the water.

If the oil has soaked into the soil or ground, you'll need to act quickly to prevent it soaking further into the ground and reaching building foundations or groundwater supplies. You'll need a professional company with training and accreditation to clean up oil that's soaked into the ground. Removal and disposal of soil contaminated with oil can be very expensive.



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- What recycling technique do you use? What are the processes involved?

Possible answers: Various techniques can be used. The typical processes are shredding, centrifuge for oil separation, iron and aluminum recovery. Some recycling plants only separate oil from filters and shred the filters. Then, they send the cleaned and shredded filters to another facility for metal recovery. Some recycling plants perform the metal recovery too. Moreover, sometimes heating is used instead of centrifuge to evaporate and re-capture the oil.

- What measures do you take to control the emissions from the recycling process?

Ideal answer: The recycling facility should be able to capture oil residue in the oil filters. An oil drain collection must be available in the initial depot area and any subsequent storage. Fume control units or flue gas treatment units are essential for any process involving heating.

Used Oil Filters

- Which materials are recovered and which materials are recovered or wasted at the end of the recycling?

Possible answers: used oil, iron and aluminum scraps, and plastics. Where iron scrap recycling is also done in the same recycling facility, furnace slag is also generated. Used oil must be sent to energy recovery or oil refinery. It shall not be dumped. For metal scraps, the presence of magnetic separator and Eddy Current Separator or similar machines are essential for appropriate recycling. For furnace slags (generated from electric arc furnace if iron scrap recycling is also included), the landfilling should be reduced by reusing the slags in other industries. For plastics and rubber, recycling is preferred over landfilling.

- What source of energy do you use for your recycling process?

Possible answers: If iron scrap and aluminum recycling happen in the same recycling plant, the sources of energy can be renewable energies (highly preferred), natural gas (preferred), light fuel oil (less preferred), and coal (least preferred). If metal recycling is done elsewhere, the source of energy for used oil filter recycling would be electricity only.

- What is the recovery rate and energy efficiency of your recycling process?

Ideal answer: The higher the better. Where several recycling options are available, the options with *higher metal recovery rate* (measured in the form of metal scrap per unit mass of used oil filters), *more efficient energy consumption* (measured in the form of energy consumption per oil filter recycled divided by total energy), and *more robust emission control systems* should be prioritized.

Acid Lead Batteries

- What is the recycling technique used?

Possible answers: Majority of lead-acid recyclers use pyrometallurgy technique. It obtains lead and metals via high temperature operation. Another (newer) method is hydrometallurgy, which recovers lead and metals from a solution by using solvents in mild conditions.

- Which materials are recovered and which materials are wasted at the end of the recycling?

Possible answers: Plastics such as PP, PE, and PVC (ideally, should be sent to another plastic recycling plant), battery paste and lead grids (should be used in recycling processes such as smelting), the acid solution (should be neutralized using slaked lime giving out water and calcium salt), smelting residues (must go to recycling plant, must not be disposed). Recycling facilities with refining slag recirculating should be prioritized.

- What measures do you take to control the emissions?

Ideal answer: The environmental control of “smelting” and “refining” processes is critical because these are the most impacting processes. Separate control systems are needed for each process. The systems must have scrubbers and flue gas treatment with bag filters or similar dust collecting unit. The bag filters are cleaned periodically, and the dust collected is ideally fed back to the smelters to recover any remaining lead.

- What source of energy do you use for your recycling process?

Possible answers: Renewable energies (highly preferred), natural gas (preferred), light fuel oil (less preferred), and coal (least preferred).

- What is the lead recovery rate of your recycling process?

Ideal answer: The higher, the better, ideally more than 90%. Recyclers with higher lead recovery rate (measured in the form of recovered lead per unit mass of used batteries) should be prioritized.

- What do you do if the acid from the battery spills or leaks? (This question applies to ICRC staff too, if they store any used lead-acid batteries)

Ideal answer: Handle the spilled acid as a hazardous waste because it is corrosive and contains toxic levels of lead. Report all spills that overflow or escape from the storage area to your line manager. Neutralize the acid using cement, lime, or other caustic. Use very dilute lime or caustic since violent reactions can occur. Litmus



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paper can be used to determine if the acid is neutralized. You may discharge neutralized solutions to the sewer system only if the system connects with the local sewage treatment plant. If a sewer system is not available, the material must be collected and disposed of as hazardous waste. Do not put acid solutions into septic systems or storm sewers. Small quantities of neutralized solids that contain no free liquids may be trashed or taken to a sanitary landfill.

AC Refrigerant

- How do you manage empty R134a containers?

Possible answers: Capturing the gas and recycling the metal and plastic (most preferred), capturing the gas and disposing metal and plastic (less preferred), disposing the container with the rest of waste (must be avoided).

- What percentage of the gas leaks during the capture process?

Ideal answers: ideally zero. Leakage of even small amounts is hazardous and has significant environmental impact.

Used Tires

- For incineration and energy recovery from used tires, what measures do you take to control the emissions?

Ideal answer: The environmental control of incineration process is critical. The fume controls and chimneys must have scrubbers and flue gas treatment with bag filters as well as activated carbon. Using activated carbon is important as the incineration of rubber produces dioxin, which can be removed by the addition of activated carbon. All filters and scrubbers should be cleaned periodically.

- What measures do you take for storage of used tires or shredded tires?

Ideal answer: Any storage of used tires or shredded tires must account for fire risk. Fire extinguishers and fire alarms must be present. Distance must be kept between tire storage areas and working areas.

Used Glass

- For glass recycling, what measures do you take to control the emissions?

Ideal answer: The fume controls and chimneys must be equipped with flue gas abatement line and chimney control.



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