CARWASH

CAR WORKSHOPS: A SERIOUS GAME APPROACH TO MANAGING WASTE CONSIDERED HAZARDOUS

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CASE STUDY:

“How to promote effective and efficient used oil disposal in a car workshop”

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1. INTRODUCTION

This document aims at presenting a joint initiative between the UK environmental regulators, trade and professional bodies and industry entitled “The Oil Care Campaign” (http://oilcare.org.uk/what-we-do/).

Oils play a vital part in our daily lives, as fuels, lubricants and manufacturing or cooking ingredients. If even a small amount of this oil is spilled it can impact on our water, plant and wildlife resources.

2. OBJECTIVE

The objective of the present document is to describe how to organise and implement a joint initiative in order to:

- develop and provide guidance for domestic, commercial and industrial users on the safe handling, storage and recovery of oils, to reduce the environmental impact of spills from poor practices in the storage, use and disposal of oils.
- promote improved infrastructure for the collection of used oil from the public.
- raise awareness of oil recovery.

This case study can be used to develop similar initiatives and campaigns.

3. BASIC CONCEPTS

Used motor oil is a very dangerous polluting product. It is considered a hazardous waste. It contains polynuclear aromatic hydrocarbons (PAH) and high levels of heavy metals.

To meet EPA's (the U.S. Environmental Protection Agency, https://archive.epa.gov/wastes/conserve/materials/usedoil/web/html/usedoil.html) definition of used oil, a substance must meet each of the following three criteria:

- Origin — the first criterion for identifying used oil is based on the origin of the oil. Used oil must have been refined from crude oil or made from synthetic materials. Animal and vegetable oils are excluded from EPA's definition of used oil.
- Use — the second criterion is based on whether and how the oil is used. Oils used as lubricants, hydraulic fluids, heat transfer fluids, buoyants, and for other similar purposes are considered used oil. Unused oil such as bottom clean-out waste from virgin fuel oil storage tanks or virgin fuel oil recovered from a spill, do not meet EPA's definition of used oil because these oils have never been "used." EPA's definition also excludes products used as cleaning agents or solely for their solvent properties, as well as certain petroleum-derived products like antifreeze and kerosene.
- Contaminants — the third criterion is based on whether or not the oil is contaminated with either physical or chemical impurities. In other words, to meet EPA's definition, used oil must become contaminated as a result of being used. This aspect of EPA's definition includes residues and contaminants generated from handling, storing, and processing used oil. Physical contaminants could include metal shavings, sawdust, or dirt. Chemical contaminants could include solvents, halogens, or saltwater.
Automotive sources of used engine oils in the transport industry include cars, buses, motorcycles, heavy duty trucks and equipment; they all use different grades and types of oils in their engines, gears, transmissions and hydraulic systems. Amounts and types of used engine oil generated depend on the kind, age and size of the vehicles.

Automotive lubricant oils are typically 75 to 85 percent base stock (i.e., crude oil-derived product) combined with performance enhancing additives. The base stock may consist of a mineral oil, synthetic oil, or a blend of both.

Mineral base oils are manufactured by the distillation of crude oils, followed by further refining of the distillates via separation or other conversion processes (e.g., hydrocracking, hydrogen reforming, and wax isomerization).

Synthetic base oils can be substituted for conventional mineral base oils.

There are legal requirements car companies must meet if they produce or store waste, collect or transport waste (carrier) or receive waste for recovery, recycling or disposal as a waste receiver (consignee).

<table>
<thead>
<tr>
<th>Used oil is:</th>
<th>Used oil is NOT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Synthetic oil — usually derived from coal, shale, or polymer-based starting material.</td>
<td>• Waste oil that is bottom clean-out waste from virgin fuel storage tanks, virgin fuel oil spill cleanups, or other oil wastes that have not actually been used.</td>
</tr>
<tr>
<td>• Engine oil — typically includes gasoline and diesel engine crankcase oils and piston-engine oils for automobiles, trucks, boats, airplanes, locomotives, and heavy equipment.</td>
<td>• Products such as antifreeze and kerosene.</td>
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<tr>
<td>• Transmission fluid.</td>
<td>• Vegetable and animal oil, even when used as a lubricant.</td>
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<tr>
<td>• Refrigeration oil.</td>
<td>• Petroleum distillates used as solvents.</td>
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<tr>
<td>• Compressor oils.</td>
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<tr>
<td>• Metalworking fluids and oils.</td>
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<tr>
<td>• Laminating oils.</td>
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<tr>
<td>• Industrial hydraulic fluid.</td>
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<tr>
<td>• Copper and aluminum wire drawing solution.</td>
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<tr>
<td>• Electrical insulating oil.</td>
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<tr>
<td>• Industrial process oils.</td>
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<tr>
<td>• Oils used as buoyants.</td>
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</tbody>
</table>


4. “THE OIL CARE CAMPAIGN”

4.1 The initiator and the supporters


The Oil Recycling Association provides good practice advice to oil users and producers of waste oil to help them look after and dispose of their oil safely and legally. It maintains the Oil Bank Line web site so homeowners can find their
nearest used oil disposal site. The association supplies oil tank stickers for domestic, industrial and waste oil tanks. The stickers provide advice on oil storage, with a reminder to have oil storage tanks checked annually to ensure they’re in suitable condition to store the waste oil and what to do if there’s an oil spill.

The Oil Care Code is funded by voluntary donations. Businesses may sponsor the campaign as part of their corporate and social responsibility activity. By doing so sponsors demonstrate their support for the environmental and social responsibility objectives of the Oil Care Code. The Oil Care Code are:

- UK environmental regulators: Environment Agency, Natural Resources Wales, Northern Ireland Environment Agency and Scottish Environment Protection Agency
- Professional bodies: Energy Institute
- Government: Welsh Government, Defra
- Businesses involved in oil: Shell UK, OHES Environmental

4.2 Main benefits for the sponsors

Sponsors are given the right to use the logo of the campaign, a registered Trade mark, stating that they are sponsoring the Oil Care Code for the particular year.

The logo of the campaign

The logo can be added to a range of company items, including company website, stationary, forms, literature, business cards and promotional merchandise.

By sponsoring the Oil Care Campaign companies will also be able to:

- demonstrate their environmental corporate performance and social responsibility;
- enhance their reputation with the public, customers and other businesses;
- show a willingness to help promote and deliver pollution incident reduction and the provision of advice and guidance to others;
- help to maintain the long term reputation of the national oil industry.

4.3 Communication channels and key messages

The following communication channels are used:

- the Oil Bank Information Line (03708 506 506);
- the Oil Bank website (www.oilbankline.org.uk);
- the official website of the campaign (www.oilcare.org.uk).

The website is highly informative providing useful information, advices, and links to the legislation, responsible agencies and institutions.
An interesting tool are the stickers which are sold through the website (4 stickers are given free). The stickers are designed to be put onto oil tanks to remind the staff how to look after the oil and what to do if there is a spill. There are three types of stickers:

**Domestic oil tank sticker**

The sticker gives information on what home owners should do if they have a spill from their tank.
Industrial oil tank sticker

The sticker is specifically designed to be used on industrial oil tanks. It includes a reminder for staff about what they should do if there's a spill from the tank.

Waste oil tank sticker

The sticker is designed as a clear reminder that only waste oil should be put into the tank. This is important under waste legislation as waste oil mustn't be mixed with any other wastes.

Some of the key messages, which are used, are the following:

- Waste mineral oils can have value.
- Label all containers and tanks as Used Oil.
- Keep containers and tanks in good condition. Don't allow tanks to rust, leak, or deteriorate. Fix structural defects immediately.
- Never store used oil in anything other than tanks and storage containers.

Companies offer collection services as they can be treated to recover valuable components or, in some parts of the country, used as a fuel at authorised sites.

IMPLICATIONS FOR CAR WASH / CAR REPAIR SHOPS

In order to ensure sustainable effects communication campaigns should be run regularly and should focus on the following messages.

How to decrease waste?

1. Oily dumpster waste can be reduced by using a rag service for shop towels.
2. Purchasing the most frequently used materials in bulk can minimize container waste.

3. Floor drains should be sealed to prevent materials from entering the sanitary or storm water sewers.

4. Run-off can be kept to a minimum by using dry cleaners and absorbents to clean up any spills.

5. Clean cardboard and other bulk material should be recycled.

6. Employees should be kept informed and involved. Positive communication and employee recognition (via newsletters, email announcements, recognition events) are critical to long-term success of waste reduction programs. Different information materials could be used, incl. stickers for the containers. A suggestion system that offers recognition for good waste reduction ideas could be implemented as well.

### Materials use and supplies

1. If possible, switching to non-chlorinated compounds is recommended, such as citrus-based solvents for parts cleaning.

2. Spring-loaded funnels or pumps should always be used to dispense and collect fluids such as antifreeze, solvents, and used oil.

3. Using a filter on parts cleaners can extend the life of the solvent. Using dirty solvent when first cleaning parts.

4. Parts should be pre-rinsed before using hot tanks or jet-spray washers.

5. Purchasing or using a solvent distillation device for solvent-based cleaners is recommended. The material can be reused at a cost savings to the shop. Keeping hazardous and non-hazardous waste separate can minimize disposal costs.

6. Labels have to be read carefully. Biodegradable does not necessarily mean environmentally sound, or that the product is exempt from regulations.

7. Cleaning equipment has to be kept near service bays to reduce spills and drips.

8. All spills should be immediately cleaned up with rags or dry absorbent.

9. Solvents and used shop towels should be stored in metal cabinets and kept away from heat sources.

### 5. APPENDIX
THE PHOTOS BELOW CAN BE USED AS ELEMENTS OF A COMMUNICATION CAMPAIGN AIMED AT REDUCING WASTE

Changing motor oil from a car, collecting the used oil in metal barrels, tools and inventory, oil cycling process scheme and loop process:

<table>
<thead>
<tr>
<th><img src="image1" alt="Changing used motor oil" /></th>
<th><img src="image2" alt="Oil recycling process" /></th>
</tr>
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<tbody>
<tr>
<td><strong>Changing used motor oil</strong></td>
<td><strong>Oil recycling process</strong></td>
</tr>
<tr>
<td><img src="image3" alt="Car workshop tools for changing the oil" /></td>
<td><img src="image4" alt="Closed loop process" /></td>
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</tr>
<tr>
<td><img src="image5" alt="Metal barrel for used oil" /></td>
<td><img src="image6" alt="Removal of barrels with used oil by specialised transport" /></td>
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<td><strong>Metal barrel for used oil</strong></td>
<td><strong>Removal of barrels with used oil by specialised transport</strong></td>
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Two gallons of recycled motor oil can generate enough energy to operate the average household for one day.
The present case study is prepared to be used for educational purposes in the CARWASH project (www.carwashproject.eu) and disseminating among students and stakeholders as a good practice.