

HAZARDS ASSOCIATED WITH THE DISPOSAL OF USED LUBRICATING OIL IN BITUMEN

Introduction

Management of products requires consideration of the Health Safety and Environment hazards and risks associated with not only the storage, transport and usage, but the complete life-cycle including the waste products. In recent years Oil Companies have been committed to the “cradle-to-grave” approach, and, for example, have implemented various collection and recycling processes for used lubricating oil. A solution for disposal of that used oil which has been periodically considered is the inclusion as a component in bitumen.

This Advisory Note has been prepared to discuss the hazards in relation to the disposal of unrefined used lubricating oil in bitumen.

Hazards

Bitumen as supplied from the refineries is not classified as a hazardous material.

However, used lubricating oil is classified as hazardous, because of health and environmental risks associated primarily with chemical contaminants, which are potentially present in the oil after use in an engine:

- Heavy metals such as lead — which are poisonous
- Polycyclic Aromatic Hydrocarbons (PAH) — risk of carcinogenicity
- Chlorine, Dioxins, PCBs (polychlorinated biphenyls) — poisonous and/or corrosive
- Solvent residues/volatiles — emissions/flammability concerns
- Other, breakdown chemicals — odour problems.

Consequently, the addition of unrefined used oil as a blending component to bitumen can pose:

- health risks where there is potential for skin contact or exposure to mist or vapours, and
- increased environmental risks because of possible leaching of heavy metals and PAHs.

Furthermore, using the criteria in the Hazardous Substances Regulations, bitumen/used lubricating oil blends may attract classification as carcinogenic materials.

Disposal Routes for Used Oil

Disposal routes for used oil, which minimise potential for either worker exposure or environmental contamination to drains, waterways and land, have been documented, eg in the CONCAWE Report 5/96 “Collection and Disposal of Used Lubricating Oil” (see www.concawe.be).

The two preferred routes are:

- Reprocessing / Re-refining,
- Use as a fuel for high temperature incineration.

The Australian Institute of Petroleum (AIP) is in the process of establishing a Code of Practice which will include the preferred disposal routes for used oil.

Summary

Unrefined used lubricating oil can be a hazardous material which should be disposed of by preferred routes.

The disposal of such unrefined material in bitumen will result in increased health and environmental concerns for the bituminous materials produced.