• The legal aspect of hydrocarbons in trade effluent and surface waters

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The legal aspect of hydrocarbons in trade effluent and surface waters

Trade Effluent
Sewerage (Scotland) Act 1968 (as amended 2002)

Legal Definition – Any liquid waste 'produced in the course of any trade or industry' which is discharged to the waste water system.

An organisation which produces significant trade effluent must obtain a trade effluent consent, which is a legal document that sets limits on the volume and nature of the discharge.

Smaller discharges may be controlled by issuing a Letter of Authorisation.
What does a consent to discharge state?

Owner of consent, nature of site activity, volume of discharge (m³), flow rate (l/s), temperature, times of discharge, access / sampling point, list of prohibited substances (e.g. Asbestos, solvents, biocides, non biodegradable detergents, Substances on List 1 Council Directive 76/464/EEC such as Cadmium and Mercury causing bioaccumulation).

Typical Consent Parameters include:

pH – Limit typically pH 6-10 or pH 5-11
Suspended Solids – Limit typically 1000mg/l.
Chemical Oxygen Demand – Limit typically 2000mg/l.
Biochemical Oxygen Demand – Limit typically 1000mg/l.
Hydrocarbons – Limit typically 100mg/l.
• Consent limits vary on a regional and site by site basis.

• Dependant on volume produced, activities, environmental risk, capability and capacity of receiving WWTW.

• Low or infrequent volume of trade effluent discharges may be issued with a ‘Letter of Authorisation’ (LOI).

• Consent failure may result in prosecution, enforcement, focused monitoring, reputation loss, higher running costs.
The legal aspect of hydrocarbons in trade effluent and surface waters

Surface Water Discharges

• The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended). Frequently referred to as ‘CAR’.


• Surface water discharges are those that discharge to groundwater, sea, river or loch
• **CAR Authorising Process** – 3 levels of authorisation.

• **Compliance with the General Binding Rules** - a set of mandatory rules which cover specific low risk activities. No application or charges.

• **Registrations** - registration of small-scale activities that individually pose low risk but, cumulatively, can result in greater environmental risk (fee).

• **Licences** - site-specific conditions to be set to protect the water environment from activities that pose a higher risk (covers single or multiple activities, simple and complex licences exist. A ‘responsible person’ (individual or organisation) is named to ensure compliance.
• A complex license lists numerous conditions for compliance:

• Site location, activity, receiving surface water, reporting requirements (e.g. incidents, emergencies), nature of the discharge (e.g. surface water, runoff).

• Descriptive conditions: Visual impact (fungus, iridescence, foaming, limit of hydrocarbons).

• Hydrocarbon limit typically 5 or 10mg/l.
Effects of hydrocarbon contamination on the environment

**Trade Effluent**

Adverse effect on the integrity and structure of the sewer network

Adverse health effect on the sewerage workers in the system

Adverse effect on the function and effectiveness of the WWTW process

‘Fat-bergs’ – Blockages, restriction of flow, disruption to road network.
Fat Berg
Effects of hydrocarbon contamination on the environment

Surface Waters

Oily film on water surface (iridescence) restricts air exchange, lowering levels of Oxygen, visual impact, photosynthesis reduced for aquatic vegetation.

Adhesion to flora and fauna – Sediment contamination – conditions for invertebrates, fish spawning grounds impacted.

Dispersion – Widespread within river system, subsequent areas, lochs or sea.
• Typical sources of hydrocarbon contamination in trade effluent and surface waters:

• Fuel storage and fuelling facilities
• Waste storage sites
• Industrial Washing / Cleaning
• Historical activities
• Transport (roads, maintenance)
• Manufacturing processes (food)
Hydrocarbon management options to site operators

Oil Storage

The Water Environment (Oil Storage) (Scotland) Regulations 2006
• Oil Treatment – Oil Interceptors (below ground)
• Oil Treatment – Oil Interceptors (above ground)
• Interceptors require maintenance and management (regular cleaning, discharge sampling).

• Licenced waste management company for oil disposal

• Positioning of emergency kits (spill clean up, drain protectors, oil absorbing booms)

• Staff training, appointed responsible people, procedures for emergencies and reactive protocols
Monitoring and sample analysis methods

**Monitoring**

Visual assessment of interceptors, storage facilities, regular monitoring of outfalls to assess compliance with consent conditions.
• The aim of effluent sampling is to obtain a representative sample of the effluent being discharged at that particular moment in time.
• As such accuracy is key to ensure: - the representative nature of sample - prevention of cross contamination - sample preservation / prevent degradation
• Must ensure that: - sample is being taken from correct sample point - external factors do not affect effluent quality
Sample Analysis Methods

• Flame ionisation detector (FID)
• Infrared Analyser
• Solvent Extraction

Analysis Issues

• Emulsified Oil – Overloading
• Surfactants – Interference
Improvements and future issues

Analysis

Lower limits of detection
Faster turnaround of sample analysis

Legislation

Tighter discharge limits – Reduction in hydrocarbon concentrations.