ENVIRONMENTAL ALLIANCE – WORKING TOGETHER

POLLUTION PREVENTION GUIDELINES

DEALING WITH SPILLAGES ON HIGHWAYS: PPG22

These notes are intended to assist those involved with spillages on highways in the identification of measures to prevent and mitigate pollution to the water environment. They do not give advice on public health and other aspects of such an incident. They have been produced by the Environment Agency for England & Wales, the Scottish Environment Protection Agency and the Environment and Heritage Service in Northern Ireland, which are referred here to as the Agency or Agencies. Further advice may be obtained by contacting your local Agency office, details of which appear at the end of these guidelines.

1. LEGAL FRAMEWORK

The Agencies are responsible for the protection of "controlled waters" from pollution and for the prevention of pollution of the environment, harm to human health and detriment to local amenity by waste management activities (except in Northern Ireland where different legislation applies).

It is an offence to cause pollution of controlled waters either deliberately or accidentally. "Controlled waters" include all watercourses, lakes, lochs and water contained in underground strata (or groundwater).

2. SCOPE

The response to spillage on the highway can involve a number of parties. These may include the emergency services, environment agencies, highway maintenance organisations, hauliers and consignors, companies committed to the CHEMSAFE scheme (Reference 1) and Local Authorities, each with a different role to play.

These guidelines are concerned with controlling the pollution that results from road traffic accidents (RTAs), spillages and illegal disposal of polluting substances on the highway. These can vary from small fuel spillages following a RTA, to major incidents involving the loss of chemicals or other potentially polluting materials (see Section 4) from drums, bulk containers or tankers. Although major incidents are rare, their potential for environmental damage is high. Effects can include the closure of public water intakes and other abstractions, damage to fisheries and river ecosystems and disruption of recreational and other river uses. They may also involve the polluter in considerable expense in clean up costs and the potential for prosecution. It is therefore vital that those involved have suitable emergency plans in place and can provide a prompt and practical response that will minimise the impact of such incidents.

3. ROLE OF THE AGENCY

In any incident on a highway, the Agency's role will be to advise on and, if necessary take responsibility for, remedial actions to prevent and/or mitigate the effects of pollution, as well as ensuring that any resultant wastes are correctly disposed of. Although the Agency will act alone to prevent pollution if necessary, a co-operative approach is encouraged and other parties can play an important part.

4. CONTAINMENT OR DILUTION OF A SPILLAGE

The Agency would prefer all spillages on the highway to be contained. However, it is accepted that actions taken to preserve life and health must take precedence over other considerations at the scene of an incident and that, under such circumstances, containment may not be possible.

The transport of dangerous goods is covered under UK and European Regulations (Reference 2) and these place a duty on the consignor to provide information on the hazards the product poses and the appropriate action to take in the event of an incident. This will usually recommend containment, with dilution reserved only for those substances most hazardous to health.

Low hazard products such as milk, beer, soft drinks, detergents, paint and dye should also be contained, as these products are often highly polluting. Although they are not covered by any specific legislation, such loads may be placarded under a voluntary "Black and White" marking scheme (Reference 3).

In all circumstances involving the spillage or potential spillage of substances on the highway, it is important that the Agency is notified as soon as possible by the parties involved so that it can provide advice and take appropriate action. If dilution is required at the scene of the incident, or pollution is unavoidable, there may still be actions that can be taken further down stream to mitigate the effects, including the prompt notification of downstream users.

Where decontamination procedures need to be used, it is important that all reasonably practicable steps are taken to protect the environment. The Agency should be informed as soon as possible when decontamination procedures are being used, so that appropriate advice can be given.

5. CONTAINMENT METHODS

Prompt action following a spillage can prevent or reduce its effects, whilst inappropriate action may cause or worsen the polluting effects. The response in the first thirty minutes to such spillages is often crucial. Containment may be on the highway, within the drainage system or in the watercourse. There are a number of containment techniques available, some of which are described below. However, at all times Health and Safety should be taken into account in deciding the appropriate response.

During the planning of new roads or road improvements, the Agency will liaise with the highway authority or developer on the need for spillage containment. The provisions made should be appropriate to the risk of accidents and the sensitivity of the receiving water. There may be circumstances where the Agency presses for retrospective modifications to the drainage system to enable containment to be provided at sites of high spillage risk or in areas draining to sensitive receiving waters.

a. Spillage control devices

Pollution control devices such as oil separators, penstocks, catchpits and lagoons may be installed as part of the highway drainage system to contain pollutants. Oil separators and catchpits may contain small and medium spills directly, although they are likely to be overwhelmed by larger spillages unless fitted with a shut off valve, which should be closed as soon as possible.

The location of these devices should be clearly marked on suitable drainage catchment plans (see Section 6) and indicated in any emergency response plans. These should be readily available to the Agency and emergency services. The use of a road side sign clearly indicating the location and type of device is recommended. Type approval must be sought for any signs that are placed within the highway boundary from the highway authority. Regular exercises to ensure familiarity with the location and operation of these devices are recommended.

It is important that any such structures are regularly inspected and maintained. For example, oil separators should be regularly inspected and emptied when required and the operation of valves and structures routinely checked. (Reference 4).

When shut off valves, penstocks or other means are provided to isolate the drainage from the outfall, it is important to ensure that the drainage system upstream can provide sufficient

capacity to allow full containment of any possible spillage. This will permit subsequent safe removal by licensed contractors. Pollution control devices such as oil separators, sedimentation tanks and ponds can provide containment in an emergency, so careful consideration should be given to the siting of the means of shutting off the drainage system. Further advice on the containment volumes required is available from the Agencies. Whenever a drainage system is shut down in this way, care must be taken during periods of rain to avoid flooding that could itself cause a hazard.

b. Pollution control equipment and materials

There are many types of portable equipment and materials available for containing and removing pollution which may also be used in conjunction with spillage control devices. A short description of each is given below.

i. Sand and sand bags

Sand, which should be kept dry, may be used to soak up spillages of oil and chemicals. Once contaminated it should be properly disposed of and not washed into drainage systems. Sand bags are more versatile and can be used to channel substances to a collection point, to block off drains, contain spills or to dam ditches.

ii. Proprietary absorbents

Usually taking the form of granules, sheets, pillows or loose powders, these absorbents are designed to deal with hydrocarbon spills, although there are varieties that can be used on aqueous chemical spills and some that can be used on both. Once contaminated, these products must be properly disposed of.

iii. Booms

Although designed for use on watercourses to control oil and other floating liquids, booms may also be used to isolate drains or to contain or divert spillages on hard surfaces. There are two main types. An absorbent boom is filled with loose absorbent fibres, which can be designed for hydrocarbons, aqueous chemicals or both. A physical barrier boom is made from materials such as PVC or PU. Some are inflated with air and/or water.

iv. Surface drain seals

These are used to seal a drain by covering the surface of a drainage gully. This type comes in a variety of forms, including purpose made devices such as clay mats and water filled bags. Alternatively, they can be improvised using available materials such as a car footwell mat or a simple sheet of polythene, weighed down with sand or earth.

v. Below ground drain seals

These can be fitted inside a pipe or gully. These are usually purpose made bags or tubes which are inflated with air, although a builder's drain bung can also be effective. By using a pipe seal, the capacity of the drainage system may be utilised as a temporary containment system to hold the pollutant safely, until it can be dealt with properly. In some cases, it may be possible to hose any remaining spilt material on the road surface into the blocked drain, allowing the incident to be dealt with more quickly and safely. However, care must be taken to ensure that the pressure head of the contained liquid does not cause the pipeblocker to fail. Extreme care should be exercised to ensure that a person installing or removing a drainage blocker is not exposed to any hazardous conditions or materials. Care also has to be taken to ensure that the contained pollutant does not overflow and bypass contained drainage systems.

vi. Sealing devices and substances for damaged containers

These devices and materials are designed for use when a tank, storage drum or valve has been punctured or damaged. Leak sealing equipment may take the form of a pad or clamp, which is put over the damaged area like a plaster, or may be preshaped and inserted into the damaged area and then inflated. Leak sealing putties are also available, ready made or supplied in a dry powder form to be mixed with water. These can be applied over the damaged area to form a temporary seal. A more permanent method may be required before moving the damaged vessel.

vii. Overdrums and portable tanks

Overdrums are designed to safely store a leaking or damaged drum. They can also be used as a temporary store for a small quantity of a spilt liquid. For larger quantities, portable tanks in a range of sizes are available. In many cases, the use of a disposable liner will allow an overdrum or portable tank to be reused.

viii. Neutralising agents

Many substances can be safely neutralised once contained, for example Soda Ash may be used for dealing with acid spillages. This should only be undertaken with expert advice, which will be available through the owner or consignor of the spilt substance.

If a soluble inorganic substance enters the water environment it may be possible to chemically neutralise the substance. This will need to be considered on a case by case basis. However, in most cases the only option with these substances will be to dam the watercourse to contain the pollutant for subsequent removal.

c. Availability of equipment and materials

Stocks of some materials may be held by the Agencies and may therefore be available to deal with spillages. Many Fire Services have been supplied with pollution control equipment, which can be brought rapidly to the scene of an incident.

A few large chemical companies belonging to the CHEMSAFE Response Network (Reference 1) may also hold stocks of suitable equipment and materials which could be brought to the scene for use by the responding company.

Highway maintenance organisations are encouraged to keep stocks of suitable equipment and materials at their depots and it is recommended that vehicle operators carry a limited quantity of appropriate absorbent and sealing materials on their vehicles, for use by the driver or emergency services where safe and practical to do so. The rapid response to a leak or spillage this allows will prevent or mitigate pollution in many cases.

There are a number of companies offering an emergency response service. Further details should be obtained directly from such companies, a list of which is available from the Agency.

d. Improvised equipment

Proprietary equipment may not be always be readily available. In these situations, containment may still be possible using locally available materials. Examples include the use of salvage sheets or tarpaulin and wooden planks to produce a temporary boom in a river, the use of fire hoses as a boom on the highway, straw bales used as a boom and absorbent and the use of a shovel to spread earth onto small spillages or to construct a dam.

6. HIGHWAY PLANS

A vital part of dealing with a spillage is the rapid identification of the watercourse or soakaway to which the affected highway drains and the means by which the drainage system can be shut off. Drainage systems can be very complex and valuable time can be wasted in locating outfalls and pollution control devices. For heavily used highways, or those passing through sensitive areas, highway maintenance organisations and other road operators can assist by supplying accurate and up to date drainage catchment plans for use by emergency service. These plans should identify carriageway catchment areas and outfalls and relate these to the recommended means of control, which should be identified and described. The plans should be as simple as possible and should not contain unnecessary detail. For other roads, drainage plans should be kept up to date and should be readily available. Highway maintenance organisations should have procedures in place to ensure that plans can be supplied quickly and that they, or an individual with an understanding of the drainage system, can be contacted quickly in the event of an incident.

7. FIRES

Fire fighting run-off from a vehicle fire can be highly polluting, due to the materials being transported, combustion products and the use of fire fighting foam. The Agency may therefore seek containment of the run-off. In some cases, the option of allowing a fire to burn in a controlled way may be less harmful than the effects of contaminated firewater run-off. This option will obviously depend on the risks associated with a particular site. Although the Agency might recommend a controlled burn, the decision and responsibility will rest with the Fire Service.

8. CLEAN UP

a. Waste disposal

Once contained, the pollutant should be disposed of as soon as possible to prevent further risk to the environment. The Agency itself has no direct responsibility for the disposal of pollutants following an incident and will only act when all other routes have been exhausted, or the response time scale is unacceptable. In normal circumstances, the Agency would expect the polluter, highway maintenance organisation or riparian owner to carry out or organise the clean up using licensed contractors. This includes the emptying of oil separators and trapped gullies, the excavation of french drains, ditches and soakaways and the disposal of abandoned drums, contaminated packaging and used absorbents.

In most cases, contained substances should be removed by registered waste carriers and taken to a licensed site for disposal or recovery, although in some cases it may be possible to use the foul sewer if available and if the sewerage undertaker approves. The movement of the waste will need to be documented with a transfer note under the Duty of Care Regulations 1991, or if it is a special waste, with a special waste consignment note under the Special Waste Regulations 1996. The producer will need to keep these notes for a statutory period of two years for transfer notes or three years for consignment notes. The legislation in Northern Ireland is slightly different and local advice should be sought.

In the case of a special waste consignment, there is normally a requirement for three days notice to be given to the Agency prior to movement. In an emergency where there is a threat to the public or the environment, the officer in charge (who may be the Fire Service Incident Commander or the most senior Police Officer present) may decide to have the material removed to a safe holding location. Under these circumstances the requirement for consignment notices is waived, as long as details are provided to the Agency as soon as possible. The subsequent removal and disposal of the waste will be subject to the normal provisions for pre-notification and the use of a licensed waste contractor.

b. Sewer jetting

Where pollution has entered sewers or drainage systems, these will need to be jetted to remove residues. The local sewerage undertaker should be consulted if public sewers are involved. Effluent generated by this process must be contained and disposed of by a licensed waste contractor.

c. Highway cleaning

In some cases, there is a need to protect the surface of the highway from attack by an aggressive spilt substance and to make it safe for road users. Pollution can occur if chemicals such as detergent are used to remove residues from the road surface and the resulting emulsified liquid is allowed to enter drains or the water environment. Emulsified liquids will also interfere with the operation of oil separators. The Agency should, therefore, be consulted on the techniques and substances used. If this process is to be undertaken, then either:

i) Soak up all the liquid using absorbent material, which should be disposed of at a licensed site. Sealing of road gullies may be appropriate to prevent liquid or absorbent materials entering the drainage system.

or

ii) Any valves or penstocks fitted in the drainage system should be closed during the clean up operation. Alternatively, drains could be blocked using drain or pipe blockers. The accumulated washings should then be removed and correctly disposed of.

9. VEHICLE RECOVERY

Particular care should be taken during the recovery of vehicles which have overturned or been damaged in an incident to ensure that there is no further spillage and that damaged tanks, vessels or other containers do not rupture. Specific guidance is available for distribution management and emergency response personnel (Reference 5) which defines the roles and responsibilities of the parties involved in the recovery operation. Not only do

these help to identify a competent recovery contractor, but they facilitate the hazard evaluation and risk assessment processes which need to be carried out to establish a safe system of work for whatever recovery action is subsequently agreed.

10. JOINT RESPONSE PLANS

As the response to incidents on the highway may involve a number of parties, the development of joint emergency response plans involving organisations likely to be involved in any spill is encouraged. This would include plans outlining responsibilities, contact details and resources available at a county level or regional level. In some cases, plans for specific sensitive areas, such as a large interchange draining to an environmentally sensitive area, may be appropriate. In addition to the above information they should include more specific details such as drainage arrangements, the location of any outfalls and pollution control devices, and an appropriate response strategy. As a minimum, the police and fire service should have standing procedures and contact numbers for the agencies in all cases where there is a risk of pollution from a RTA.

11. REFERENCES

1. CHEMSAFE: Assistance in Chemical Distribution Emergencies: Second Edition, December 1996. ISBN:1 85879 050 4
2. The Carriage of Dangerous Goods by road Regulations 1996, SI 1996 No.2095: The Stationery Office, Tel: 020 7873 0011/9090
3. New Black and White Scheme for non-hazardous substances
4. PPG 3: The use and design of oil separators in surface water drainage systems
5. Recovery of road tankers and tank containers carrying dangerous substances - Guidelines for distribution management and emergency personnel: January 1998. ISBN: 1 85897 069 5

References 1 and 5 are available from the Chemical Industries Association, Tel: 020 7834 3399

References 3 and 4 are available from the Agencies

All the Agencies' pollution prevention guidance notes are available on the web sites listed below.

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Printed on Cyclus TCF Recycled Paper.

HO-06/02-12K-C-BAMA