

Contaminated Land News – May 1999

Groundwater Regulations

Groundwater is an important part of the water cycle, both as a supply for surface waters and as a valuable drinking water resource in its own right. Groundwater is polluted to some extent beneath a large number of industrialised areas and where uncontrolled disposal of waste onto land has taken place. For example, over 80% of all boreholes sampled in the Birmingham and Coventry areas showed evidence of pollution from trichloroethylene.

The Groundwater Regulations 1998 came into effect on 1 April 1999 as part of the transposition of the European Directive on Groundwater Protection (80/68/EEC). The Regulations cover England, Wales and Scotland and are designed to ensure that the use and disposal of substances on land which could directly or indirectly pollute groundwater are properly controlled. They require an authorisation for previously unregulated disposals of any listed substance to land from 1 April 1999.

By affording additional protection to groundwater, the Regulations should help to contain water undertakers' costs where it is necessary to clean up aquifers. There should also be longer term environmental gains through enhanced protection of water quality.

Agriculture seems to have been on of the main targets of the new Regulations - activities such as the spreading of used sheep dip are covered. However ground engineering activities including site investigation may also fall under the spotlight.

The EA and SEPA now have a duty to issue notices prohibiting or controlling other activities in or on the ground involving controlled substances where this is necessary to prevent the entry of List I substances into groundwater or its pollution by List II substances.

Those observing statutory codes of practice will not normally be served with such notices. It is this provision that should now be attracting the attention of ground engineers. Putting in place codes of practice on activities that could result in a breach of the regulations, offers a mechanism to ensure compliance with the regulations.

The regulations cover "direct discharge" means the introduction into groundwater of any substance in list I or II without percolation through the ground or subsoil. Groundwater is defined as "all water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil".

"indirect discharge" means the introduction into groundwater of any substance in list I or II after percolation through the ground or subsoil;

"pollution" means the discharge by man, directly or indirectly, of substances or energy into groundwater, the results of which are such as to endanger human health or water supplies, harm living resources and the aquatic ecosystem or interfere with other legitimate uses of water;

Exclusions from these Regulations include radioactive substances, domestic effluent from isolated properties outside a source protection zone, insignificant discharges of listed substances, activities covered by a Waste Management Licence under Part II of the EPA 1990.

A substance is in List I if it belongs to one of the following families or groups of substances-

- (a) organohalogen (forming) compounds
- (b) organophosphorus compounds;
- (c) organotin compounds;
- (d) substances which possess carcinogenic, mutagenic or teratogenic properties in or via the aquatic environment
- (e) mercury and its compounds;

- (f) cadmium and its compounds;
- (g) mineral oils and hydrocarbons;
- (h) cyanides.

A substance is not in list I if it has been determined by the Agency to be inappropriate to List I on the basis of a low risk of toxicity, persistence and bioaccumulation.

A substance is in list II if it could have a harmful effect on groundwater and it belongs to one of the following families or groups of substances-

- (a) the following metalloids and metals and their compounds:

Zinc, Tin, Copper, Barium, Nickel, Beryllium, Chromium, Boron, Lead, Uranium, Selenium, Vanadium, Arsenic, Cobalt, Antimony, Thallium, Molybdenum, Tellurium, Titanium, Silver.

- (b) biocides and their derivatives not appearing in list I;
- (c) substances which have a deleterious effect on the taste or odour of groundwater, and compounds liable to cause the formation of such substances in such water and to render it unfit for human consumption;
- (d) toxic or persistent organic compounds of silicon, and substances which may cause the formation of such compounds in water, excluding those which are biologically harmless or are rapidly converted in water into harmless substances;
- (e) elemental and inorganic compounds of phosphorus;
- (f) fluorides;
- (g) ammonia and nitrites.

(2) A substance is also in list II if-

- (a) it belongs to one of the families or groups of substances set out in paragraph 1(1) above;
- (b) it has been determined by the Agency to be inappropriate to list I under paragraph 1(2); and
- (c) it has been determined by the Agency to be appropriate to list II having regard to toxicity, persistence and bioaccumulation.

Bob Harris, Head of the Environment Agency's National Groundwater and Contaminated Land Centre, said: "A priority-based procedure, based on the vulnerability of the groundwater and the risks posed by the potential discharge or disposal, is being drawn up so that the most important activities and sensitive locations can be tackled first."

The basis of this procedure will be the Agency's Groundwater Protection Policy, which already categorises land surface into areas of greater and lesser vulnerability, based on geological and soil characteristics as well as a land-zoning system around public water supply boreholes.

The regulations will be enforced by the Agency through a variety of mechanisms. These include: formal authorisations to control discharges and disposals, written notices, to prevent pollution where a threat is identified the application of codes of practice to encourage good practice and avoid pollution generally.