DUTCH "LAW POLLUTION SURFACE WATER" (LPSW)

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1. Background

The Dutch "Law Pollution Surface Water" (LPSW) went into operation in December 1970. It was a time that the quality of surface waters deteriorated quickly. Some examples will be given.

Before 1960 it was safe to swim in the river Rhine and in the summer weekend many families enjoyed their stay on the river shore. Thereafter it was forbidden to swim in the river due to the dangerous water quality mainly caused by heavy metals and chemicals that were discharged into the river by the heavy industries along the river in The Netherlands and Germany. Fish died and after some time there were no fishes in the river an more. The people got afraid to even sit along the shore.

The city of Rotterdam used the water of the river Meuse for drinking water. The population in The Netherlands is used to drink the water straight from the tap. However, the quality of the river water deteriorated. To maintain the quality standards, the treatment of the water became so intensive that the drinking water, although safe, had a bad taste and people started buying bottled mineral water instead.

The horticultural glasshouse industry suffered severe losses owing to leave damage caused by the salts in the water originating from mining industries upstream.

The inland canals and lakes, that were previous used for swimming and fishing, got choked by algae, were poor in oxygen, smelled badly and looked dirty. Swimming was no longer possible. Some fish were not any more fit for consumption. The main cause of the problem was the mineral enrichment of the water by nitrogen and phosphorus stemming from agriculture and households.

Some kind of fish caught in the North sea were deformed and cancerous due to pollution brought in by the rivers.

The situation was alarming and much work was done to improve the situation. There was a need for a strict anti pollution law and many actions were taken in the good direction.

At present the drinking water of Rotterdam is much better, fish have reappeared in the Rhine, the glasshouse industry is much better off and the inland waters look clear again.

2. General

It is not allowed to discharge used water into surface water unless permission is obtained from the water administrating bodies (WAB, competent authorities). The permission is granted only with binding conditions. The guiding principle is: **the polluter pays**!

Discharges are policed by a team of inspectors. The inspectors are officers of the WAB. Contraventions can be dealt with by administration or penal court.

Administrative sanctions can be annihilation of the permission, a financial retribution that can be returned when the guilty party has improved the situation or the application of administrative coercion that will lead to a court case when the guilty party does not obey.

The WAB can also prosecute the offender in court who may levy a fine and/or imprisonment.

The party that received administrative sanction can appeal to court if he believes the WAB is in error.

After a court sentence prosecutor and/or the sentenced party can appeal to higher court, even until supreme court.

In principle there are two kinds of WAB:

- the state government (through the ministry of Public Works and Waterways, MPWW), who controls the larger, inter-provincial, rivers and lakes;
- the provincial governments, who control the provincial rivers, canals, ditches and lakes. The provinces often delegate their tasks to water-boards. A province counts with a number of water-boards which have been formed along hydrological boundaries.

Water-boards can delegate part of their licensing duties (those related to sewage systems) to the municipalities. The municipalities are responsible for the sewage systems. Normal households are free to discharge their used water into the sewage system. As the sewerages will ultimately end in open water, sewage water needs to be purified according to the requirements of the water-board.

In case of disagreement, municipalities and water-boards can both appeal to the court.

In the Netherlands all four government levels mentioned (state, province, municipality, water-board) are formed by councils that are popularly elected. At state level, the council is called parliament. The government supervises the province who supervises both the municipalities and the water-boards. Civilians, industries and commercial enterprises pay state, provincial, municipal and water-board taxes alike.

3. Sources of pollution

Two pollution sources are recognized:

- point sources (households, sewage systems, industries, garbage dumps)
- non-point or diffuse sources (e.g. fertilizers and biocides in agriculture)

The LPSW is mainly concerned with point sources, consisting of fixed engineering works like drains, pipes, pumping stations. Non-point sources are of their concern only when they refer to dumping of pollutants through mobile carriers (e.g. carts, trucks, buckets). This, however, is exceptional.

Normal households can freely discharge their used water into the sewage system. When they are not connected to such a system, they can be forced to do so by the municipality. The costs of connection are borne by the household, unless the cost is excessive and a subsidy is given. When there is no sewage system nearby, as occurs for example in far-off households in the country side, the household can apply for a septic tank permission from the province, the competent authority for control of groundwater quality.

Under certain conditions industries can discharge into the sewage system (this is called indirect discharge) and into open water (direct discharge). They may need more than one kind of permission.

Non-point pollution from agricultural land is controlled by the Law Environmental Management (LEM) that sets criteria to farm management (e.g. restricted and conditional use of biocides, manure and fertilizers). Other non-point sources also rest under this law.

The protection of groundwater comes under the sphere of LEM as well, whether it concerns a point-source (e.g. injection) or a non-point source (e.g. agricultural land).

Discharge of radio active materials resides under another law.

4. Effluent water quality

The LPSW has drafted a black list of about 15 dangerous chemicals (mainly organic compounds) and their concentration limits in the effluent. The WAB have to adhere to the list (Table 1) when extending discharge permissions. In addition a gray list of more than 150 matters has also been made.

Purification plants of water-boards must adhere to additional norms regarding phosphorus, nitrate,

biological and chemical oxygen demand, as well as un-dissolved particles.

The quality requirements of effluents of industries, hospitals, certain shops and restaurants, depend on whether they are able and allowed to discharge into the sewage system or whether they discharge directly into surface water.

Table 1 Black list of dangerous chemicals and minerals

Mercury	Perchloroethylene
Cadmium	Tetrachlorocarbon DDT
Hexachlorocyclohexane	PCP
Sulphate and chloride from titaniumdioxide industry	Drins (aldrin, dieldrin, Endrin, isodrin)
TCB	Chloroform
EDC	Hexachlorobenzene
TRI	Hexachlorobutadiene
	Asbestos

When an industry discharges matters mentioned in the black list, it will obtain a permission only when it applies the best possible techniques (BPT) to remove the matter, irrespective of the cost. When it concerns matters figuring on the gray list, the best practicable means (BPM) must be applied, i.e. means that take into account the economic possibilities of the industry. When the WAB feels that a better purification technique is to be applied than the industry can afford, it can resort to subsidy funds made available for this purpose.

When granting a permission the WAB should also take into consideration the "standstill principle", meaning the actual quality of the receiving water may not increase. When the general quality of the receiving water is expected to improve in the course of the time owing to progress in quality control, the permission cannot lead to giving an industry more pollution rights than without improvement. However, in the vicinity waters of very good quality, with little contamination, this would hamper all industrial development, even when very stringent purification measures are taken. In such cases an exception can be made that the quality of the receiving water may not "significantly" increase. This implies that in no way the quality of the receiving water may deteriorate to the level of standard qualities considered acceptable elsewhere. The vague meaning of the word "significant" may give rise to court cases of opponents of the permission.

Many permissions, and the conditions and regulations involved, are a compromise between WAB and the industry concerned, but also between lower level and higher level WAB authorities. When water users or officially registered foundations for the protection of the environment disagree with the conditions and regulations stipulated in a permission, they can contest the permission in court.

Even different WAB authorities can go to court against each other, but this is exceptional because they usually settle their difference of opinion in mutual consultation.

The LPSW is mainly source/effluent oriented. The protection of quality of the water bodies rest with the national government by amending the LPSW according to experience and policy. In future, European directives will bring about a change in this principle (see below).

5. Protection of quality of surface waters

The LPSW is merely concerned with quality of effluents. Objectives of conservation and improvement of quality of surface waters is responsibility of the national government.

The objectives are not prescribed by law but the state council (parliament) has delegated this to the council of cabinet ministers (CCM).

This, in turn, has delegated some of the tasks to MPWW. The objectives can result in additional concentration limit requirements.

In future, the protection will be extended through European directives demanding that open surface waters are classified according to their function (drinking water, swimming water, fish water, nature reserve, shipping water etc. The more delicate the function (e.g. drinking water), the higher the norms will be for the water discharging into it.

6. Protection of quality of groundwater.

Protection of groundwater quality does not rest under LPSW but under LEM.

Groundwater management comes under provincial jurisdiction and is not delegated.

Infiltration projects of water into the underground works are forbidden unless permission is granted, whereby conditions are set.

In groundwater bodies designated as drinking water, agriculture is subject to stringent requirements. No chemicals and biocides are permitted.

Garbage dumps, usually operated by one or a group of municipalities, must have an impermeable bottom, so that no percolation water can infiltrate into the groundwater.

7. Responsibility to adhere to the norms.

The responsibility to adhere to the norms rests with the owner of the permission. He must bear the cost of water purification. For industries the costs can be subsidized by the government to a certain extent.

Municipalities often contract water-boards to establish and operate water purification plants to treat the sewage water for which the municipality has received discharge permission provided the water meets certain quality standards. Also provincial governments may enforce such deals. However, municipal purification plants also exist.

The costs of public purification plants are borne by the municipal and water-district inhabitants who pay purification taxes. Municipal inhabitants also pay sewerage taxes.

Purification plants often discharge water into larger water bodies under the jurisdiction of MPWW. These plants also need permission to do so. The quality of this water is not only tested against the list of dangerous matters, but also criteria are set regarding phosphorus, nitrate, biological and chemical oxygen demand, and un-dissolved particles.

8. Levy's (financial charges)

The levy's (financial duties) of households is based on n arbitrary inhabitant-equivalent (IE). Each house is accounted for 3 IE, but if it is occupied by a single person only 1 IE.

The levy's for small industries and other similar establishments is done in various ways. Some are charged in relation to the tap water use. Others are charged according to standard values per unit kind of activity, such as leather factories, fruit-conserve plants, lemonade producers, military complexes, schools. Still others are charged per unit total product or per laborer per day.

The larger industries are charged according to pollution degree. This must be measured by the industry itself according to prescribed methods of analysis, and the measurements are checked on a sample basis by the inspectors. The inspectors have the right to enter the premises, investigate goods, sample effluent, have insight in the administration system etc.

The factors involved are oxygen demanding substances and heavy metals.

In the last category the charges are per pollution unit (PU). For mercury, cadmium and arsenic it is 0,1 kg.

For lead, copper, nickel, zinc, and chromium it is 1 kg. In some cases also chlorides have PU.

The aim of the levies per PU is to stimulate industries to develop better methods of effluent quality control.

9. Industrial consultation groups

In order to effectuate a smoother policy development with the stakeholders, one has formed industrial consultation groups at national level in which agreements are made about environmental duties/targets and the elaboration and implementation thereof.

There are consultations groups for different industrial classes (like building, metal, printing-graphical, chemical, textile-carpet, dairy products, food industry, agriculture, horticulture in glasshouses). Representatives of the associations of the industrials classes are members of the consultation groups, together with representatives of the ministry of environmental protection and some selected experts.

When mutual acceptance is reached, the agreement will serve a basis for the granting of permissions.

The following table give a list of groups of industries for which regulations were made under LPSW regarding **indirect discharges** (e.g. into a sewage system, not directly into open water).

a. (petro)chemical
b. ore processing
c. storing and recycling waste materials
d. treatment of surfaces of materials
e. paint and ink
f. leather
g. impregnating timber
h. cleaning of barrels and (truck)tanks
i. paper and carton
j. printing
k. photography (using more than 20000 m paper per year)
l. textile improvement
m. backing layers on carpets
o. hospitals
p. cleaning timber
q. car dumps
r. revision of engines
s. industries discharging of more than 5000 IE oxygen demanding materials per year or more than 500 m3 waste water
t. horticulture under glass