

DUTCH INDUSTRIAL TARGET GROUP APPROACH: AN ENFORCEMENT STUDY ON THE VOLUNTARY ENVIRONMENTAL AGREEMENT WITH PETROL STATIONS

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SUMMARY

A major vehicle for achieving the Dutch environmental objectives is the industrial target group policy. Voluntary agreements are reached on achieving emission reductions of volatile hydrocarbons to the air, water and soil by the years 2000 and 2010. The agreed emission reductions are given concrete flesh in individual company environmental plans or in an environmental action program for a whole business sector.

This article describes the results of an enforcement study by the Inspectorate for the Environment into compliance with the environmental action program at petrol stations in the Netherlands. The program is based on an agreement signed in 1991 between central and local governments and trade-associations. The study investigated whether the petrol stations placing the greatest load on the environment had implemented the agreed environmental measures and what the enforcement role of the competent authority had been.

1 INTRODUCTION

1.1 Reasons for the project

The following environmental problems are particularly relevant at petrol stations in the Netherlands:

- soil and groundwater contamination by motor vehicle fuels;
- air pollution caused by volatile hydrocarbons;
- contamination of water caused by vehicle fuels and detergents;
- the risk of fire and explosion; and
- noise nuisance caused by delivery units and traffic (tankers loading and discharging as well as traffic arriving and departing).

With a view to resolving these problems, the Inspectorate for the Environment of the Ministry of Housing, Spatial Planning and the Environment, trade-associations, the Association of Netherlands Municipalities (VNG), and the Association of Provincial Authorities (IPO)¹ drew up an action program. This program contains a phased clean-up program to be put into practice by July 1999 (this is the date by which all stations in the Netherlands must have satisfied the requirements under the program).

The agreement was signed in September 1991. The associated action program was converted into a statutory arrangement, the Environmental Management Petrol Stations Decree (ref. 1), on March 1, 1994. This provides a statutory basis for implementing the activities in the program.

Petrol stations are classified into categories by environmental load. Stations imposing the heaviest environmental load have to satisfy the requirements at an earlier date (by March 1, 1994) than stations placing less of a load.

A soil survey is to be carried out at each petrol station. If the soil is contaminated, a soil clean-up plan has to be drawn up. A redesign plan also has to be submitted to the competent authority.²

After the clean-up has been carried out and the station redesigned, the station has to submit notification of readiness to the competent authority. The latter body checks whether the clean-up and redesign plan have been properly carried out.

1.2 The Dutch industrial target group policy

The government cannot solve the environmental problems by its own, let alone prevent new problems arising. Development focused on sustainability is only feasible if government, industry and non-governmental organizations make common cause. One major vehicle for achieving Dutch environmental objectives, as set forth in the National Environmental Policy Plans (ref. 2), is the target group policy. Agreements are reached with each branch of industry, for example the printing industry, the primary metals industry, the chemical industry, the wood-preservation industry and petrol stations on achieving emission reductions by the years 2000 and 2010 compared to the base year of 1985. The reductions are recorded in what are termed integrated environmental targets, which constitute part of the agreement signed between government and industry. In the case of petrol stations, for example, the environmental objectives are given concrete flesh in the aforementioned action program.

Although the target group policy is a question of voluntary agreements, it is desirable that the agreements reached for individual companies be set forth in the environmental licence, so that the agreements are enforceable. In the case of petrol stations, the environmental measures included in the action program are set forth in the Environmental Management Petrol Stations Decree. In this manner, the agreed measures are amenable to enforcement.

What is the role of the Inspectorate for the Environment in the industrial target group policy? On behalf of the Minister of Housing, Spatial Planning and the Environment, the Inspectorate monitors compliance with the environmental and emission reduction targets set forth in agreements by the industrial target group. This is achieved by performing sample checks on compliance with the agreements (implementation by companies and implementation of the concrete measures in environmental licences).

1.3 Project objectives

The project includes the following three objectives:

1. Gaining understanding of the way in which industry is implementing the program.
2. Gaining understanding of the way in which the competent authority is implementing its responsibility for monitoring compliance with the program.
3. On the basis of 1 and 2, making a pronouncement on whether the in the action program has been achieved.

1.4 Structure and approach to the project

The project spans petrol stations throughout the Netherlands. A study group was assembled on a random basis from those stations imposing the heaviest load on the environment and which ought to have been cleaned up by March 1, 1994. The sample covered 50% of petrol stations that ought to have been ready.

A questionnaire developed specifically for the purpose was the basis for an integrated check on the study group by the Inspectorate for the Environment between October 1994 and January 1995, the results of which provide some insight into compliance with the action program by petrol stations and the way in which the competent authority has discharged its responsibilities. Company checks were carried out in cooperation with the competent authority where possible. In cases where shortcomings were discovered, the competent authority was requested in writing to take enforcement action.

2 IMPLEMENTING THE STUDY AT PETROL STATIONS

2.1 Description of general data

Before the action program was drawn up, there were 7,304 petrol stations in the Netherlands. The activities required for the program can be divided into four phases:

1. Conducting a soil survey.
2. Drawing up a soil clean-up plan.
3. Implementing soil clean-up.
4. Redesigning the petrol stations to meet air, water, and other requirements.³

Companies lacking the financial resources to fund the soil clean-up and redesign were able to apply to a Clean-up Fund. One condition was that after admission to the fund, the petrol station would close down operations within three months. An agreement for a contribution from the fund was signed with 1,917 companies. The action program no longer applies to these stations. It was also found that 523 companies fell outside the scope of the program, either because these were not public points of sale or because they had already ceased operations.

In total, there remained 4,864 companies that did fall within the scope of the program. 218 of these ought to have notified that they were ready by March 1, 1994. These 218 companies constitute the study group from which 107 stations were selected randomly.

The checks revealed that only 76 companies, which were still in active operation, actually qualified for the study group. Those omitted were stations that were found to no longer exist or which closer inspection revealed as belonging to a different category, placing less of a load on the environment.

2.2 Results

The 76 companies selected were studied on the basis of the four phases of the program. The results of the soil clean-up are discussed in section 2.2.1, covering the first three phases of the program. Section 2.2.2 then reports progress made in redesign of stations, the fourth phase of the action program.

2.2.1 Phase 1: conducting soil survey

Each of the 76 companies was checked to ascertain the scale on which soil and/or groundwater surveys had been carried out. The requirement to perform research into soil contamination had been met in over 90% of cases. The first phase had been completed at virtually all the petrol stations investigated.

2.2.2 Phase 2: drawing up clean-up plan

The study revealed that 62 of the 76 companies required clean-up of soil contamination⁴ Before the clean-up proceeds, the clean-up plan has to be drawn up and submitted to the province for review. Compliance with the second phase of the program was moderate. Approximately 20% of stations had not yet started drawing up a clean-up plan or were still busy working on it.

2.2.3 Phase 3: implementation of soil clean-up

At petrol stations where soil clean-up was required, 32 stations (52%) had completed their clean-up, whilst 30 stations (48%) had not completed their clean-up or only partially so. Of the 30 stations that had not (yet) cleaned up it was found that:

- 14 stations were busy with their clean-up operations.
- 6 stations had performed soil surveys and had drawn up clean-up plans, but implementation of clean-up had still to start.
- 10 stations were still busy with soil surveys and discussing them with the competent authority.

The third phase of the action program had not yet been sufficiently implemented. Slightly more than half the number of clean-ups had been completed at the time of the study (October 1994 - January 1995). Further investigation among companies that had not yet completed the clean-up indicated that two thirds of them were busy with the clean-up or could start within the near future.

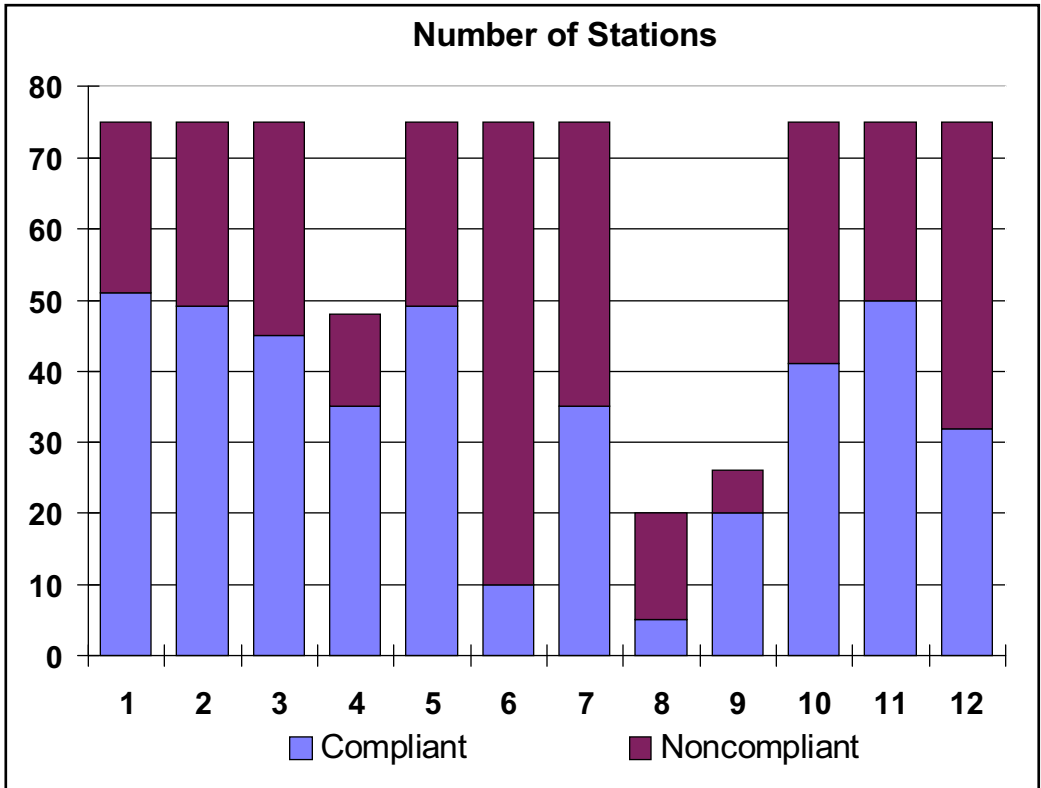
2.2.4 The fourth phase: redesign

The preventive action to avoid future soil contamination has to be taken during the third phase, or after completion of the third phase of the program. This section describes the results of the study into the main elements of the redesign. All 76 stations were included in the study and not just those that had completed the third phase. The reason for this is that the redesign requirements also apply to stations that have not yet cleaned up. Figure 1 shows the results for each measure or provision.

2.2.4.1 Soil protection measures

In terms of soil protection, the liquid-proof floor or pavement, protection of the filling point, the leak-detection systems and inspection of the cathodic protection of underground tanks and pipes were investigated.⁵ The state of affairs with each of these points is discussed briefly below.

1. Liquid-proof floor
52 stations (68%) of the 76 petrol stations had a liquid-proof pavement, which prevented any fuel spillages during filling from entering the soil.
2. Protection of the filling point
49 (64%) of the 76 stations had a drip tray or some other device to catch any spillages during the filling of underground fuel tanks.
3. Leak-detection system

Figure 1. Number of petrol stations scoring positively or negatively against each measure

- 1 = liquid-proof floor
- 2 = protection of filling point
- 3 = leak-detection system
- 4 = corrosion protection inspection (cathodic protection)
- 5 = vapour-return system
- 6 = presence of complete installation log
- 7 = static delivery units
- 8 = mobile delivery units
- 9 = car wash facilities
- 10 = anti-collision devices at filling point
- 11 = static electricity earthing point
- 12 = soil resistance report

There are two ways of using a leak-detection system for identifying soil contamination:

- By means of groundwater measuring tubes which are sampled at least once a year.
- By connecting leak-detection systems equivalent to the measuring tubes. For example, electronic detection which identifies hydrocarbons.

46 (61%) of the 76 petrol stations had fitted at least one of these provisions. Seven companies were using several systems simultaneously. Thirty companies failed to satisfy this requirement.

4. Cathodic protection inspection

Cathodic protection of underground tanks and pipes has to be checked annually. 27 companies did not have any cathodic protection present and inspection was therefore not applicable. Of the 49 remaining stations, annual inspections were performed in 36 cases (73%). This annual inspection was not being conducted in 27% of cases or in any event there was no written evidence to this effect.

28 stations (37%) satisfied all the mandatory soil protection provisions (cathodic protection where necessary). 14 stations (18%) had failed to achieve any of the mandatory provisions.

2.2.4.2 Other measures

5. Vapor-return system

In order to prevent petrol vapors escaping from the underground tank when tankers are unloading, a vapor-return system is required, to return the vapors to the tanker. A vapor-return system was found to be in place at 49 stations (64%).

6. Presence of complete installation log

The purpose of the installation log is to record the results of measurements, inspections and checks on the units. The mandatory logs were found during inspection at nine (12%) of the petrol stations investigated. All the required forms were found at three of the nine.

7/8. Delivery units

Delivery units are divided into mobile units, i.e. a delivery for mixed lubrication, and static delivery units.

The static delivery units satisfied the requirements at 45 stations (59%). The most common cause of failure to satisfy the requirements was that the delivery hoses were too long. They extended beyond the edge of the liquid-proof floor. It was also found that the quality of the hoses at one station did not satisfy the requirements. There was also one station where there was no separation between the cycle path and the delivery pumps. Anticollision devices to prevent collisions with delivery units were present at 50 stations (66%).

Twenty of the 76 stations had a mobile delivery unit, and the unit satisfied the requirements at eight of them (40%). Deficiencies encountered included the absence of an overspill trap and too long delivery hoses. The set-up of the mobile

unit was found to be good at ten stations (50%). At the other ten stations, the mobile unit was not totally affixed to the liquid-proof floor in a number of cases. Five stations (25%) satisfied the requirements as well as the set-up.

9. Car wash facilities. There was a car wash at 27 stations. A total of 6 of the 27 (22%) failed to comply with the requirements. The most common deficiency was the absence of a liquid-proof floor in the washing area.
10. Anticollision devices at filling point 28 petrol stations (37%) did not have provisions to prevent collisions with motor vehicles at the filling points for the underground fuel tanks.
11. Static electricity earthing point To avoid sparking caused by static electricity, a cable should be connected between the tanker and the underground tank during unloading. 26 stations (34%) did not have such an antistatic facility.
12. Soil resistance report. Soil resistance must be measured before underground tanks are laid. The soil resistance says something about the aggressiveness of the soil in which the tanks and pipelines are laid. Soil resistance measurements should be repeated every ten years. A soil resistance report with the results of the measurements was available at 32 stations (42%).

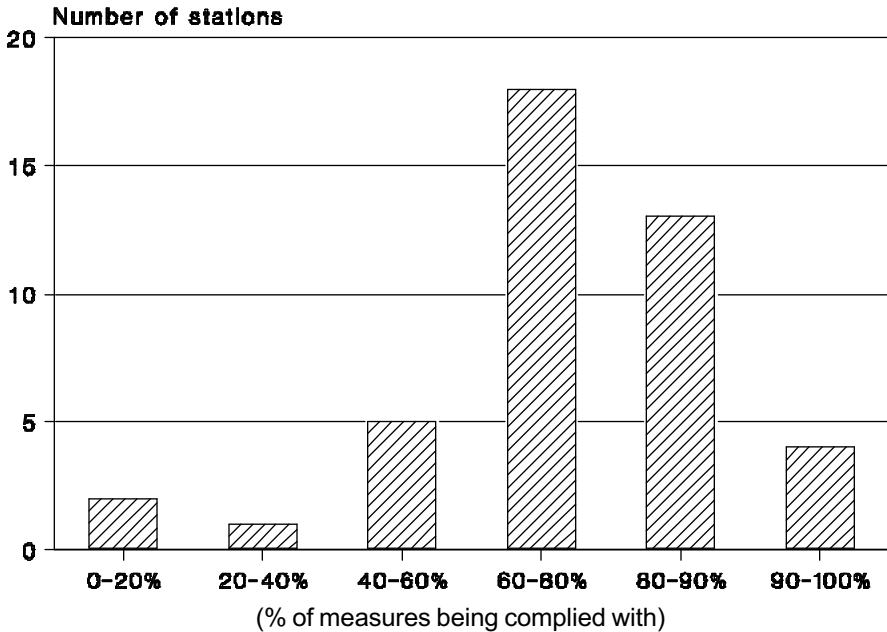
Assessment of the redesign at companies that have completed their soil clean-up operations and at companies where no soil clean-up is necessary revealed compliance with an average 79% of measures. Figure 2 shows the percentage of measures being complied with at cleaned-up companies and those not contaminated.

Progress in implementing the fourth phase (redesign) was modest. On average, 79% of the provisions were in place at companies where there was no further clean-up in operation (43 stations). This means that in a number of cases no preventive measures to avoid soil contamination had been taken.

41% of the measures had not been taken at all the stations together (76 companies). Figure 1 shows that in most cases the installation log is absent. Only 12% of the petrol stations had an installation log. Where it was present, however, it was often not complete.

It also emerges that many mobile delivery units fail to comply with the requirements: where present, only a quarter of cases satisfied the requirements. The picture with static delivery units is also poor. Fewer than half the units had anticollision devices and satisfied the regulations.

Figure 2. Compliance with measures for petrol stations where the soil is not contaminated or where clean-up is complete



3 THE COMPETENT AUTHORITY

All petrol stations in the Netherlands have to comply with requirements in the action program or the Environmental Management Petrol Stations Decree. Furthermore, any soil contamination identified must be cleaned up. The municipality and the province in which the petrol station is located are the competent authorities for implementation.

This chapter describes the responsibilities of the competent authorities and how they have implemented them.

3.1 The responsibilities of the competent authority

Municipalities and provinces have a steering and corrective role to play in implementing the action program.

The responsibilities of the competent authority are described in this section on the basis of the four phases of the program.

3.1.1 Phase 1: conducting soil survey

The municipality can urge a company to have a soil survey carried out, after which they must submit the survey report to the municipality. The municipality judges the results of this survey. If it is a clean-up study, the province is the competent authority and assesses the results.

3.1.2 Phase 2: drawing up clean-up plan

The province ensures that where soil contamination exists, the petrol station draws up a clean-up plan and submits it. The province announces its verdict within one month of receipt of the plan.

3.1.3 Phase 3: performing soil clean-up

The province is the competent authority for soil clean-up. It must monitor its implementation.

Upon completion of the clean-up the company has to draw up an evaluation report and submit it to the province for assessment. The province determines on the basis of the evaluation report whether the clean-up operation has had sufficient of an impact. The province will decide whether or not the clean-up has been effectively carried out within six weeks of receipt of the evaluation report.

3.1.4 Phase 4: redesigning the petrol station

The municipality must review the redesign plan drawn up by the petrol station. According to the action program, this must be done within one month. In addition, the municipality must monitor progress with the redesign.

Upon completion of the fourth phase of the action program, the company must notify the municipality. The municipality then checks whether the redesign has been carried out in accordance with the program or the Environmental Management Petrol Stations Decree.

3.1.4.1 Periodical and interim checks

Municipalities perform periodical multi-media checks at the petrol station to check whether it is complying with the conditions of the licence and the Environmental Management Petrol Stations Decree. These multi media checks must be carried out at least once every two years. The municipality may also perform interim checks, for example in response to complaints or incidents.

3.1.4.2 Actions

In the event of infringements against the regulations in the Environmental Management Petrol Stations Decree, the municipality must take enforcement action to terminate these infringements. These actions may range from reporting the company to applying such measures as coercion or closing a company.

3.2 Results

The situation was investigated to ascertain the progress achieved by the provinces in assessing the quality of implementation of soil clean-up operations. Of the total of 38 evaluation reports received, 18 were assessed and approved within the six-week period.

All 76 stations investigated ought to have cleaned up and redesigned by March 1 1994. There have been virtually no checks by municipalities on completed redesign. Only six stations had given notice of being ready and at the time of completion of the study, one had been checked. The main reasons for failing to notify completion are as follows: companies do not know how to do so and at the time of the study no standard notification forms were available. At the end of the inspection study in January 1995, 43 companies (57%) were ready with their redesign. On average, 79% of the measures had been implemented. Only two stations scored 100%.

Periodical multi media checks also proved to have been inadequately carried out by the municipality. In 1994 and 1995, a total of 34 checks were carried out (on 45% of the companies investigated). In practically all cases municipalities had taken enforcement actions against infringements of the environmental regulations.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

This section presents the main conclusions of the study on the basis of the objectives.

4.1.1 Understanding how petrol stations are implementing the action program

The Inspectorate for the Environment carried out multi media checks on compliance with the action program at 76 stations from the group of stations placing the heaviest load on the environment. These checks revealed the following:

- Almost all companies investigated had completed the first phase of the action program (soil survey).
- The second phase of the program (drawing up clean-up plan) had been completed by approximately 80% of companies. The other 20% had not yet drawn up a clean-up plan required or were still working on it.
- Compliance with the third phase of the program (performing the soil clean-up) was poor: 52% of clean-ups were complete.
- The fourth phase of the program (redesigning the station) scored only modestly. 79% of the provisions had been made at companies where the soil clean-up was complete or not required (43 companies). The total study group of 76 companies was achieving compliance with 59% of measures.

Despite the fact that companies had done a great deal of work and that clear improvements could be observed, it has to be said that clean-up operations have in general been too slow. At the time of the study, and long after the latest date of March 1, 1994, 30 companies had not yet completed their clean-up operation. Nor had the redesign been carried out with due care. Often, provisions were missing and requirements were not being complied with. The conclusion is, therefore, that the action program has not been satisfactorily carried out.

4.1.2 Understanding of the way in which the competent authority is implementing the program

The competent authority has a steering and corrective role to play, such as checking the results of the soil survey, approving the clean-up report, checking on clean-up, approving the redesign plan and checking the redesign itself.

The study showed that municipalities are not keeping sufficient of a finger on the pulse at petrol stations with a view to implement the action program. All stations placing the heaviest load on the environment which had not cleaned up or redesigned by March 1, 1994, are guilty of infringement. Municipalities have in general failed to monitor this sufficiently: in 1994 and 1995 multi media environmental checks were carried out on 45% of the stations investigated.

Finally, the clean-up plans are not always assessed by the province within the one-month period.

4.1.3 Has the action program achieved the desired goal?

The study shows that the aim of the program, to avoid and limit the environmental load posed by petrol stations, has only partly been achieved. The target group has not taken sufficient initiative to curb environmental loading in time and voluntarily. Although not all stations were investigated, a representative study was carried out. The results of the study lead to the conclusion that many stations placing the heaviest load on the environment had not completed the action program by March 1, 1994.

The action program would perhaps have been carried out more effectively and with greater vigor if there had been better monitoring of implementation and introduction of the accompanying legislation, the Environmental Management Petrol Stations Decree. Apart from clear legislation, effective information, preferably in consultation with the trade-associations, is important. Every player, the authorities and industry alike, must be clear what is expected of them.

4.2 Recommendations

The recommendations from the study have been grouped according to the various participating bodies.

4.2.1 Provinces

- Assess plans and evaluation reports for soil clean-up by the specified deadlines.
- In cases of soil clean-up operations, exchange more information between all the parties involved (municipalities, petrol stations, executive agencies and water boards).

4.2.2 Municipalities

- Develop a planned approach which provides for:
 - effective progress controlled via a milestone plan;
 - a timely start to the requisite procedures and redesign of the petrol station;
 - standardized multi media (progress) checks, including checks after completion of the redesign; and
 - coordination of other municipal agencies or departments, for example, Land Use planning.

4.2.3 Trade-associations

- Develop a milestone plan for soil clean-up and redesign.
- Draw up a simple checklist for redesign, which can be discussed with the contractor/installer. This should include all major requirements.
- Develop a structure for an installation log and ensure that the log is actually present at petrol stations.
- Actively provide information on the environmental measures agreed in the context of the target group policy on petrol stations.

4.2.4 Petrol stations

- Ensure effective and adequately relaxed planning of soil clean-up and redesign.
- Use the checklist developed by the trade-association for redesign.
- Upon completion, send in the notification of completion in good time.
- Instruct staff on environmental rules.

ENDNOTES

1. The Association of Netherlands Municipalities (VNG) and the Association of Netherlands Municipalities (IPO) can be described as cooperative associations of municipalities and provinces in the Netherlands respectively.
2. On the basis of the Soil Protection Act, the province is the competent authority for soil clean-up. On the basis of the Environmental Management Act, the municipality is the competent authority for redesign (implementation of other environmental measures) of the petrol station, including the soil survey.
3. Redesign means taking the measures and the provisions specified in section 2.2.2.
4. At the time of the study, there were three petrol stations where it was unknown whether soil and/or groundwater were contaminated. These were deemed stations with a need for clean-up in the study.
5. Cathodic protection protects underground tanks and pipes against (additional) corrosion by aggressive soil, such as wet (maritime) clay or peat. To determine the level of aggressiveness of the soil, the soil resistance of the ground should be established before underground tanks or pipes are laid.

REFERENCES

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