

A TAX-INDUCED TREATABILITY SCHEME FOR DREDGED SEDIMENTS IN THE NETHERLANDS

Johannes M. Gadella (jmg@scg.nl), Antonie Honders, Henk van Zoelen
(Centre for Soil Treatment, Houten, The Netherlands)

ABSTRACT The policy in the Netherlands concerning waste recognises an order of preference, with prevention as the ideal solution, followed by reuse (either direct or after treatment) and confined disposal as the least preferred option. The reuse of dredged spoils is the cheapest removal option and one that is frequently used. Treatment of dredged spoils is more expensive than disposal and hence difficult to stimulate. Consequently, 2002 saw the introduction of a tax of € 13.48 per ton on the disposal of treatable dredged spoils. The environmental objective was to cancel out the economic advantage of disposal over processing and thus to encourage treatment. The introduction of this tax measure has had a number of positive effects:

- In-situ sediment site investigations have been extended to include the determination of the sand content, and more attention is being paid to identifying sandy and non-sandy batches;
- More accurate records of the dredging, transportation and disposal processes are being drawn up;
- Treatment is being carried out under a quality assurance system geared towards maximising sand production.

INTRODUCTION

The Netherlands lies at sea level in the delta of the rivers Meuse and Rhine. As a consequence of this location a lot of sediment settles in this delta. There has therefore been a lot of (maintenance) dredging in the Netherlands in order to keep the waterways passable and preserve the drainage function. Dredged spoils have long been used as embankment fill and ground consolidation.

With the realisation that the surface waters were polluted as a consequence of waste discharge by large industries and atmospheric deposition in the 1980's, there was a sharp turn-around in the appreciation of the dredged spoils as a beneficial product. Much of the dredged spoils released turned out to be polluted and so they could no longer be simply distributed over the land.

THE PROBLEM

For the period 2002 to 2011, the water management companies are forecasting that 400 million m³ of sediments need to be dredged. Around half will consist of salt-water spoils, roughly 90 % of which will be eligible for redistribution in the aquatic systems (e.g. the North sea). The remaining 10 % (20 million m³) will have to be processed or disposed off. The other half will consist of fresh-water spoils, roughly 30 % of which will be eligible for redistribution on land or the aquatic systems. The remaining 70 % (140 million m³) will have to be processed or disposed off.

POLICY DEVELOPMENT

The Netherlands policy on waste recognises a hierarchy in the approach to the waste problem, known as Lansink's ladder. The hierarchy is as follows:

- Prevention.
- Reuse, optionally after treatment.
- Disposal.

Within the framework of the Netherlands Pollution of Surface Waters Act (Wet Verontreiniging Oppervlaktewateren), most of the point sources were cleaned up and eliminated during the 1980's and 1990's. The diffuse sources were partly tackled as part of a move to reduce air pollution and decrease the use of pesticides. As a consequence of these efforts, the quality of newly deposited sediments improved markedly. However, in many cases the newly deposited sediments are not clean enough to allow for direct reuse.

In the Netherlands, the process of maintaining and cleaning up harbours, lakes, rivers and canals often produces polluted dredged spoils. These spoils should preferably be redistributed on land or in the aquatic system rather than treated or disposed off.

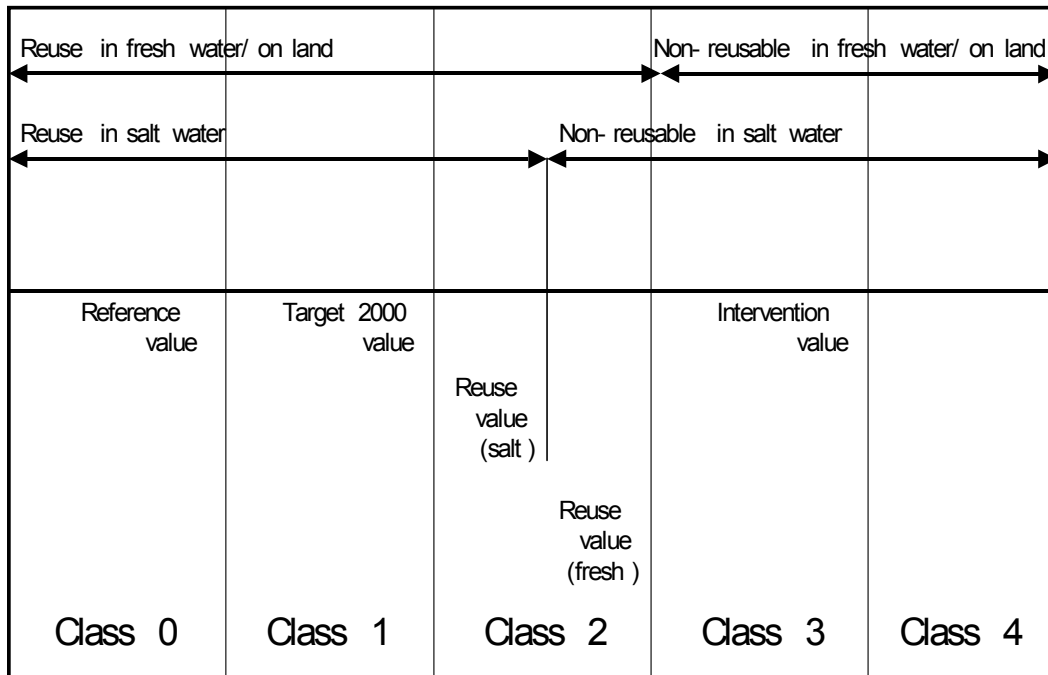


FIGURE 1. Classification of dredged spoils

- Target value = Marks the line between clean and polluted dredged spoils
- Reference value = Marks the line between Class 1 and 2 spoils, based on the environmental quality objective for newly deposited sediment supplied in 2000
- Content test (salt) = Marks the line that determines whether salty dredged spoils can be redistributed in salt waters
- Testing value = Marks the line that determines whether dredged spoils derived from fresh waters can be redistributed on land or in fresh water systems (under certain conditions)
- Intervention value = Marks the line for serious or impending serious reduction in the functional properties of the sediment for man, plant or animal life

For the purposes of distinguishing between redistributable and non-redistributable dredged spoils a distinction has been made on the basis of the contaminant concentration level. The criteria for determining whether or not dredged spoils from fresh water systems can be redistributed differ slightly from those concerning dredged spoils from salt water systems. Figure 1 indicates the difference in redistributable and non-redistributable dredged spoils. Table 1 takes the parameter “mercury” as an example to indicate the level of the testing standards referred to in Figure 1.

TABLE 1. Environmental quality standards for mercury

Standard	Value (mg/kg d.s.)
Target value	0.3
Reference value	0.5
Uniform content test (salt)	1.2
Testing value	1.6
Intervention value	10.0

Any dredged spoils that are non-redistributable must, in accordance with the order of priority, be processed, if possible, into a reusable product or disposed off. From the beginning of the 1980's onwards, a lack of financial resources treatment and a deficiency in terms of treatment capacity meant that non-redistributable dredged spoils tended mainly to be disposed off in confined disposal sites. Many of the resources available for cleaning up of contaminated sediments were used for the construction of large-scale disposal facilities for permanent storage.

The start of the 1990's saw the development of a policy in the Netherlands aimed at reducing disposal and encouraging treatment. In 1993, the policy standpoint on the removal of dredged spoils became effective and included a treatment target of 20 % of non-redistributable dredged spoils. During the same period an extensive research programme was initiated that examined treatment technologies for polluted dredged spoils. This research revealed that the simple techniques in particular, such as sand separation, ripening and landfarming, offered a wealth of possibilities for processing polluted dredged spoils into reusable products at acceptable costs.

In 1994, the policy objectives were translated into a tax measure, which imposed a levy of € 13.48 per ton on the disposal of waste as from 1 January 1995. Dredged spoils were exempted from this tax during the period 1995-2001 because treatment of dredged spoils was still in its infancy and it was still difficult to define the treatability targets for dredged spoils. In 2001, treatability criteria were developed based on the application of sand separation as a treatment technology.

In 2002, the general exemption from taxation for dredged spoils was nullified and replaced by an exemption for non-treatable dredged spoils only. Polluted dredged spoils with a sand content of more than 60 % were regarded as treatable. Moreover, the residue from the treatment of sandy dredged spoils is regarded as non-treatable provided that the treatment company operates according to a certified treatment process. The Centre for Soil Treatment (SCG) was appointed by the Minister for the Department of Housing, Spatial Planning and the Environment (VROM) to independently assess the treatability of batches of dredged spoils and to issue certificates for batches of dredged spoils that were non-treatable and could be disposed off without payment of the tax levy. The SCG also independently certified the treatment companies processing sandy dredged spoils.

The environmental objective behind this tax measure is to discourage the disposal of sandy dredged spoils and to promote the processing thereof instead.

THE FISCAL MANAGEMENT TOOL

Since treatment is generally more expensive than disposal a supplier of dredged spoils will be inclined to dispose off his dredged spoils. However, the introduction of a tax levy on disposal reduces this price difference. Hence, the supplier of dredged spoils will be more inclined towards treatment.

The Environmental Taxes Act (Wbm) came into force for soil as early as 1995, meaning that ever since then a tax has been levied on the disposal of treatable soil. Figure 2 illustrates the trends in soil disposal and treatment during the period 1992-2001. Besides the introduction of the Wbm, a drop in the price of soil treatment, an improvement in the possibilities for reuse and the acceptance of reused soil as a beneficial product have led to a steady reduction in soil disposal and a steady increase in soil treatment. It is hoped that a similar change can be achieved for dredged spoils.

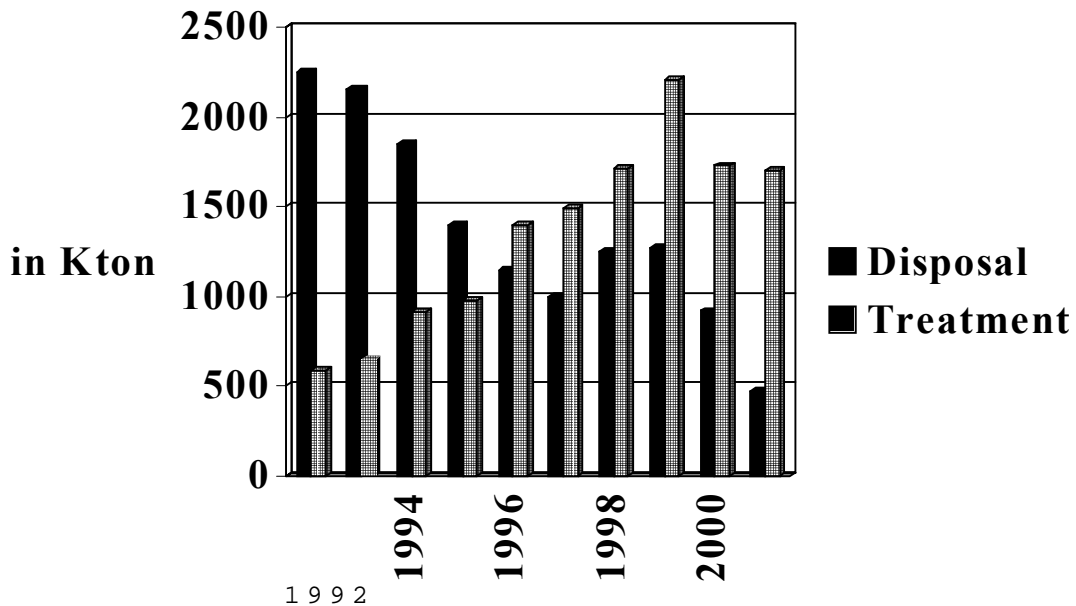


FIGURE 2. Soil treatment and disposal. Trends for the period 1992-2001

ASSESSMENT METHOD

The SCG assesses the treatability of dredged spoils on the basis of in-situ sediment site investigation that has been carried out in accordance with one of the 9 protocols that apply in the Netherlands. Based on this investigation, the SCG assesses whether the material is actually dredged spoil, whether it has been investigated in accordance with the proper protocol, whether the location has been divided correctly into sandy and non-sandy batches of sediment, whether the batch is polluted and whether the batch is sandy or not. If the SCG decides that the material is a batch of polluted, non-sandy dredged spoil, which has been investigated properly, and a correct distinction has been made at the location between sandy and non-sandy batches, then a certificate of non-treatability is issued, implying that the batch can be disposed of without payment of taxes.

EXPERIENCES IN 2002

2002 was a transitional year in which many projects that had already been commissioned in 2001 were generically supplied with a certificate of non-treatability.

Table 2 provides an overview of the number and volume of applications, which were assessed using the method described in the preceding paragraph.

TABLE 2. Number and volume of applications for a certificate of non-treatability

	Number	Volume (m3)
Non-treatable	255	3,162,224
Not properly investigated	65	391,235
Treatable	31	74,844

Incidentally, the fact that the percentage of treatable batches is so low does not imply that such a small amount of dredged spoils is treatable. It is not obligatory to submit an application to the SCG. Instead, the supplier may opt to deliver dredged spoils directly to a treatment company. On top of that, many batches of treatable dredged spoils were supplied with a generic certificate of non-treatability under the transitional arrangement referred to above. The transitional arrangement expired on 1 January 2003, and the effectiveness of the arrangement can be seen through 2003 by looking at the production figures belonging to the treatment companies.

SIDE EFFECTS

A number of positive side effects of the arrangement are currently being observed.

In-situ sediment site investigation. Polluted dredged spoils with more than 60 % sand are regarded as treatable using sand separation techniques. To enable a distinction to be made between sandy and non-sandy batches the site investigation protocols were extended in 2002 to include the determination of the sand content. Site investigations have historically been geared towards drawing up an inventory of the pollutants and measuring the average concentration. To enable a distinction to be made between treatable and non-treatable batches a uniform site investigation protocol is under development.

Dredging and transport. Since only non-treatable batches of dredged spoils are eligible for tax exemption, greater attention in the dredging and transport processes is being devoted to the separate dredging and transportation of batches. In addition, better records are being kept of the dredging and transport processes for the purposes of furnishing proof.

Disposal. For non-treatable dredged spoils the SCG issues certificates of non-treatability. The administrative records of the disposal facility administer these certificates, granting a right to exemption from the waste collection levy. The administrative records are inspected by the tax department. This has resulted in improved administrative procedures and more effective use of the available disposal space.

Treatment. The treatment of sandy polluted dredged spoils produces a residue that contains the bulk of the pollutants and has to be disposed off. This residue can be disposed off without payment of the waste collection tax, provided that the processing company is employing an approved quality assurance scheme. Six treatment companies have now implemented a quality assurance scheme of this nature, resulting in an improvement of the treatment process and the maximisation of the reuse of the sand produced.

CONCLUSION

The introduction of the tax on the disposal of treatable dredged spoils not only encourages the processing of sandy dredged spoils, it has also given companies the impetus to carry out proper sediment site investigations and to perform the processes of dredging, transportation, treatment and disposal of dredged spoils more precisely in an environmentally sound manner.