Beyond Compliance. Environmental Management and Toxics Reduction in Practice
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Chapter 4

How the purchasing department can contribute to toxics reduction.

Abstract

The role of purchasing departments in the prevention in the field of hazardous substances ("toxics reduction") was studied. Purchasing departments can make a substantial contribution in this field, provided that a number of requirements are met. The requirements are related to support by experts, organisation of purchasing, linkage with registration and information systems within the company, the ability to obtain adequate information about supplies and provisions for adequate financial means. Four medium sized companies in The Netherlands were interviewed to investigate the extent to which such requirements are met with in practice. It was found that only a part of the preventive potential of purchasing departments was exploited, with substantial between-company differences.

Introduction

Prevention of waste and emissions is an important element in environmental management (1,2). A purchasing department may make an important contribution to actual prevention. By including prevention related requirements relevant to environmental performance of suppliers, it may be helpful in the prevention of waste and emissions by suppliers. By buying products that are conducive to quantitative and/or qualitative waste and emission prevention it may contribute to improved environmental performance of its own company (3).

So far contributions of purchasing departments to prevention of waste and emissions has been underemphasized in the scientific literature. Against this background we outline the potential contribution of purchasing departments to preventive activities in the field of toxic substances at the company to which the purchasing department belongs, and present the results of a survey in four medium sized Dutch companies into the extent in which this potential is actually exploited.

The potential role of the purchasing department in toxic substances related prevention

Because they actually buy toxic substances that are used in the company purchasing departments are in a strategic position to contribute to prevention in the field
of toxic substances or toxics reduction.

They may do so by evaluating such substances that are on the market and select less hazardous substances on a case by case basis. They may also do so by using fixed decision-rules, for example by implementing white lists (outlining substances that are acceptable, excluding all other substances) or black lists (with substances that are considered unacceptable).

To be able to play this role effectively and optimally, a number of requirements should be met. Firstly a purchasing department should be able to control or influence the actual purchasing in line with environmentally oriented decision-rules that are part of company policy. Meeting this criterion supposes either a centralized purchasing department or a decentralised system of purchasing supported by adequate software or other equivalent means of control and communication.

Secondly the purchasing department should be supported by specialists with expertise in the environmental and toxicological evaluation of hazardous substances to guide decision making (4).

The purchasing department should be in a position to obtain required information such as data on chemical specifications of products and material safety data sheets from the suppliers concerned and check their correctness (5, 6). Furthermore, to optimise the use of hazardous substances there should be linkage with systems registering stocks and use of those substances ('accounting systems') and information systems for those within the company that are confronted with hazardous substances.

Finally adequate provisions should be made to enable higher prices to be paid for more preferable purchases.

Here, we evaluate four medium sized companies in The Netherlands as to the extent to which these requirements are met.

**Method**

The study was carried out by structured interviews with the head of the purchasing department, the coordinator of the environmental program of the company or the head or other member of staff of the environmental department. When present, written material was collected (procedures of purchase, information per-
tinent to the organisation of the department). The interviews were recorded, made into a written text and then sent back to the interviewed persons for comment. The interview texts were finalised on the basis of these comments. The interview was structured into four parts with open questions (see table 1). The first part was intended to get insight into the organisation of the purchasing department. The second part focused on the procedures of purchase. The third part focused on suppliers and services delivered by others. The last part was to learn more about acceptable surplus costs for less hazardous products and materials.

Table 1

Interview

Questions concerning the organisation of the purchasing department
1.1. In which way is the department organized.
1.2. Are all products and materials purchased by the purchasing department.

Questions concerning the procedures of purchase
1.3. Are there procedures to preclude or limit the purchase of products or materials toxic to man and/or other organism. What kind of procedures are used.
1.4. Is a register of hazardous substances present. How does registration takes place.
1.5. Is the register of hazardous substances coupled to the purchase of substances.
1.6. Is materials accounting and a stock management system present, if so how does it work.

Questions concerning suppliers
1.7. Do contractual rules concerning environmental effects exist for suppliers of products and goods. If so, how do they read.
1.8. Does the supplier give enough information about products and/or substances.
1.9. Do suppliers have to comply with other requirements with regard to working condition and quality control.

Questions about the costs
1.10. Which surplus costs for less hazardous products and materials are acceptable to the company.
1.11. Which criteria determine the acceptance of higher costs for such products and materials.

Results

Company 1 (food industry, workforce 800)

The company has a central purchasing department. The goal was that, by the end of 1996, 98% of all purchases are handled through the purchasing department. To exclude undesirable products the purchasing department has developed the following procedures:

* anyone ordering a product or a material does so through the purchasing department
* the purchasing department reviews whether the substance(s) present are registered under an article number in the company register
* if there is no such registration an expert reviews the substance(s) present using the criteria mentioned below and compare it with similar products.

If the substance meets the criteria it will be ordered. If the substance does not meet the criteria, additional information is obtained from the supplier. The member of staff of the company requesting the product / material has to justify its use and is asked for alternatives.

To gain an article number, the product has to meet the following criteria:

* quality of the product
* suitability
* easy to handle
* is the product easy to store
* review of eco-toxicological and human toxicological properties on the
basis of the material safety data sheet (MSDS) provided by the supplier.

The toxicological properties outlined on the MSDS are checked against the database of the National Toxicology Center. The data are compared with those of similar products. The reason behind this type of procedure was dictated by quality requirements and also by the fact that the company wastewater treatment facility is very sensitive to pollution. The computers of the stock department and the purchasing department are coupled. Through this coupling stock management and materials accounting is feasible. Within the software of the purchase program runs a program for the manufacturing of safety sheets. Safety sheets are called up with the article number. In various departments safety sheets are present for the substances worked with in these departments.

During the procedure of giving all substances an article number 110 substances have been reviewed. Exclusion criteria were used and this has led to the exclusion of 40 substances. Benzene and chlorofluorocarbons (CFC's) are no longer purchased (in the many refrigerators present CFC's were exchanged for HCFC's).

Not all substances had been screened at the time the company was interviewed. Recurrent screening has not yet been worked out. Services provided by other companies are virtually absent in this company. Therefore no criteria are developed for this purpose. Criteria for reviewing environmental performance of suppliers are not yet developed (those interviewed said no supplier will remain (7)). Expertise for review of products and materials is given by the head of the laboratory (a chemist). Higher prices are paid for higher quality, however it is not clear if this also applies for higher prices due to environmental considerations.

**Company 2** (metallurgical-electrotechnical industry, workforce 1300)
The company consists of one central office and various production sites. A central purchasing department exists together with a purchasing representative at each site. A large proportion of the purchases runs through the central department. A review system for suppliers is set up.

Interest in toxics has resulted from concern about working conditions and legal requirement. An exclusion criterion for ordering a product is the presence of substances in the product which are on the black list of the European Community (EC3, a list of 129 substances). The purchasing procedure is as follows: new products and materials are screened for environmental effects before the purchase is
made. Based on a standardized questionnaire product information will be made available to people within the company. Currently the product information is restricted to human toxicology. The questionnaire asks for:

* the composition
* physical properties
* chemical properties and reactivity
* toxicology with quantitative data such as LD50/LC50 and TLV/MAC
* qualitative ecological properties
* waste and methods for waste disposal
* procedures in case of accident
* Risk and Safety clauses
* environmental aspects (dangers, preventive measures in case of accident) pertinent to pollution of air, water and soil.

The information obtained from the questionnaire is used to draw product information sheets for in company use. The product information sheets for hazardous substances were expected to have been completed by the end of 1996; 865 substances and products will be dealt with. The policy of the company is aimed at a reduction in the total number of hazardous substances used. To achieve this goal information is gathered from product information given by the suppliers. Several hazardous products are no longer purchased, mostly on the basis of the black list. When reduction in the number and quantity of hazardous products is reached, registration of hazardous products will be worked out. Registration and review of substances and products is not done by the purchasing department, but is carried out by the stock departments which are under the control of the central maintenance service. The substances and products (and goods and services) that have already been purchased have yet to be reviewed and this will be carried out periodically.

The purchasing procedure operational at the moment considers the following aspects:

* raw materials
* environmental burden during the production process and the waste disposal of the product, this burden has to be broken down into effects on
soil, water and air, noise, vibration and recycling
* possible alternatives that are less of a burden to the environment
* sustainability
* additive substances and waste
* environmental care of the producer of the materials (environmental care system, environmental policies, yearly environmental report).

The data needed to review the aspects mentioned above are derived from the product information given by the supplier. Reviews of data are carried out by the maintenance service and the purchasing department. This gives rise to disagreement in the evaluations.

A register is kept of products and goods. Each article receives a unique number after registration, reregistration is carried out after two years.

Review aspects of services by other companies are (separate from environmental care):

* materials used for services
* waste disposal during the delivery of the service

Purchasing related to the construction of new sites is not carried out by the central purchasing department. For these purposes criteria have yet to be developed and incorporated into the contracts. Several demands for example for the separation and removal of waste are already incorporated into contracts. The company allows higher costs for products and processes that eliminate substances with ecotoxicological and human toxicological risks.

**Company 3** (government office, workforce 1800)

Although this governmental office has a central purchasing department the strong decentralisation of the organisation leads to independent purchase by the different departments. Only thirty percent of the purchase of goods and services is carried out by the central purchasing department of the company. The majority of purchased office utilities and furniture is carried out by the central department.

The following purchase procedure is under development:

* articles are environmental screened (the criteria are not yet developed) and are given a score from one to three
* the score is added to the purchasing programme
* the different departments receive their total score by the end of the year
when the total score is above a certain limit those responsible for the 
environmental programme should indicate ways to lower this score.

The registration of hazardous products will be coupled to the purchasing depart-
ment. Registration, material accounting and also environmental screening pro-
grammes will be carried out in the purchasing department in the near future. At
the present time there are recommendations for machinery and materials. Also
guidelines for packaging materials exist. Exclusion criteria operative at the
moment for purchasing are products that contain cadmium, asbestos and CFCs.
The following requirements are mentioned in contracts with suppliers:

* no cleaning products containing chlorine
* reuse of aluminium containing plates in the restaurant
* return of toner cartridges and fixatives to the supplier.

There are no rules for allowable surplus costs for purchasing products with less
environmental impact.

**Company 4** (bank, workforce 1600)
The company has a purchasing department but the different departments are not
obliged to use the purchasing department for their purchases. About ten percent
of all purchase of goods and services is handled by the purchasing department.
The aim of the company is to purchase according uniform rules. A procedure to
reach this goal is currently being developed including technical and legal aspects.
This procedure also takes account of environmental and workplace related legis-
lation and other aspects. Environmental aspects will be weighed by scoring on a
checklist. The checklist will contain questions pertinent to materials and products,
durability, stocking related rules, safety, energy expenditure, influence on interior
climate, waste, packaging materials and emissions. No exclusion criteria are used.
The internal accountancy service will control the uniformity of purchasing. So far
there has been no significant reduction in the purchasing of hazardous substan-
ces. The registration of hazardous products will not be coupled to the purchasing
procedure. The printing office is the only department where material safety data
sheets are present with information on the hazards of the products used. All other
departments using hazardous products lack safety data sheets at the moment.
Material accounting is absent. No requirements are made regarding the environ-
mental performance of suppliers. It is accepted by the company that ‘green’ pro-
Products may be more expensive, to which extent however is unclear.

Table 2 surveys the results against the requirements that should be met to optimise the role of the purchasing department in the field of toxic reduction.

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<th>company 1</th>
<th>company 2</th>
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<tbody>
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<td>purchase central or decentralised with adequate software</td>
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<td>purchase decentralised without adequate software</td>
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<td>explicit company policy in the field of toxic reduction</td>
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<td>environmentally oriented purchasing procedures</td>
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<td>* white list</td>
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<td>* black list</td>
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<td>* case by case</td>
<td>+</td>
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<td>environmentally oriented purchasing procedures applied</td>
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<td>purchasing department supported by specialists</td>
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<td>purchasing department * linkage with accounting systems</td>
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<td>* linkage with employee information systems</td>
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<td>adequate check of information derived from the supplier</td>
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<tr>
<td>explicit rules for allowable increases of purchasing costs</td>
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</table>
Discussion

Organisation of the purchasing department.
All companies interviewed have a purchasing department. The percentage of pur­chase carried out by the department varies from ten to ninety. Two companies have a highly centralised system of purchasing. These companies have succeeded in bringing down the total number of products purchased and reduced also the number of hazardous substances within the company. The same holds for one of the companies with a more decentralised way of purchasing. One of these companies has not so far been able to reduce the number and amount of hazardous substances. This may in part be linked to relatively recent interest in this subject.

Environmentally oriented purchasing may be more difficult to carry out when purchasing is decentralised. This may be counteracted by using adequate software and stricter control of the purchasing procedures. For instance by allowing decentralised purchase for registered products only. In this case registered products will already have been screened for environmental aspects.

Purchasing procedures
All companies have environmental criteria built into their purchasing procedures. Three out of four also have criteria to exclude specific substances. In one company the criteria are operational. One of the three companies having a black list uses the black list of the European Community, the other two companies exclude only two or three substances. None of the companies has a white list. Selecting on a case by case basis is operational in company 1. Company 2 is working this out at present. A policy to reduce hazardous substances is present only in company 2. Specialists needed for the review of products and the environmental and toxicological evaluation of hazardous products are present in company 1 and 2. Company 1 and 2 produce product information sheets for internal use, company 3 and 4 are working on similar information. Company 1 has a program for the production of product information sheets coupled to the purchasing program. The program can also be used as an information system. In company 2, product information sheets are produced by the central maintainance service not coupled to purchasing. The lack of linkage may reduce the effectiveness of the environmental purchasing procedure. The purchasing departments of company 1 and 2...
have a linkage to accounting systems, this can optimise the use of hazardous substances.

**Costs**

In all four companies it is possible to pay higher prices for products with less environmental impact. The extent to which this takes place could not be established in this survey.

**Suppliers and services**

Only company 2 had developed criteria for reviewing suppliers and services pertinent to their environmental care. However the procedure is not operational yet. The review criteria relate to reviewing materials used for services and waste disposal. An overall procedure to review the environmental management of the supplier is not yet worked out. The potential importance of these procedures regarding to the environmental performance of suppliers warrants further investigation.

**Control of information given by suppliers**

Control of information by suppliers was only operational in company 1. This is no luxury because sampled information by suppliers was often found to be defective and/or incorrect if checked against literature (8).

**Quality control and working conditions**

In company 1 quality requirements were the reason to start with the purchasing procedure. In company 2 concern about working conditions and the related legal registration of hazardous substances had an important impact on the policy development pertinent to hazardous substances.

These results suggest that quality control and/or concern about working conditions in a company can have an impact on the prevention of hazardous substances in the field. Further investigations are required to substantiate this notion.
Conclusions

Purchasing departments can make a substantial contribution in a company to prevention of hazardous substances, provided that a number of requirements are met. The requirements are related to support by experts, organisation of purchasing, linkage with registration and information systems within the company, the ability to obtain adequate information from suppliers and provisions for adequate financial means. In four medium sized Dutch companies it was found that only part of the preventive potential of purchasing departments was exploited, with considerable between-company differences.

References

3. Nota Produkt en Milieu, Vrom, 93/12.
5. Arbowetgeving en Wet milieugevaarlijke stoffen (WMS).
6. Veiligheidsbesluit fabrieken en Werkplaatsen (VBF) artikel 188c.