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## **NORWAY'S EXPERIENCE IN BUILDING AN INSPECTOR CORPS: EDUCATION AND FINANCING**

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### **SUMMARY**

A review of the development of the inspection corps at the Norwegian State Pollution Control Authority is given. The current organization of this corps and the financing of activities is described. The training program for education of the inspectors is illustrated.

### **1 INTRODUCTION**

The Norwegian State Pollution Control Authority (SFT) administers the Pollution Control Act and parts of the Product Control Act. This administration involves issuing permits and regulations and enforcing these provisions. The work is organized as illustrated on the organization map (see figure 1). Permits and regulations are issued by several departments, but enforcement and monitoring of compliance are executed by only one department, the Control Department. Thus the task of composing and passing permits and regulations are clearly separated from the enforcement, which is undertaken by the inspector corps.

The Control Department consists of four divisions employing 32 people. All four divisions are occupied with monitoring compliance and enforcement. Each division is slightly specialized:

- Industrial Compliance Division deals with monitoring compliance mainly in industrial enterprises all over the country.
- Control Division Telemark is located in Grenland, the most densely industrialized area in Norway. They operate an ambient air monitoring network in the area and monitor compliance of the local industry.
- Chemical Control Division inspects mainly manufacturers and importers for compliance with the provisions of the Product Control Act.
- Environmental Investigation Division is on call 24 hours to turn out in the event of accidental discharges, industrial fires, or other acute discharges.

### **2 DEVELOPMENT OF AN INSPECTION CORPS**

Separating the responsibility of issuing requirements and enforcement into different departments, is of recent date. It was carried into effect in 1991. In the period from 1974 (when SFT was established) to the current status, the way enforcement has been organized has gone through a considerable development. The development reflects to a great extent the development of environmental consciousness and knowledge in industry. I will give a short description of the history from 1974 to 1994 and some of the experiences from this period.

Inspection of the enterprises and enforcement of permits and regulations were before 1991 undertaken by the officer responsible for issuing the permit. During these regular visits, different claims in the permit were checked, but the visit was also used for technical discussions and the inspection might turn into an engineer to engineer discussion, rather than enforcement of requirements. The

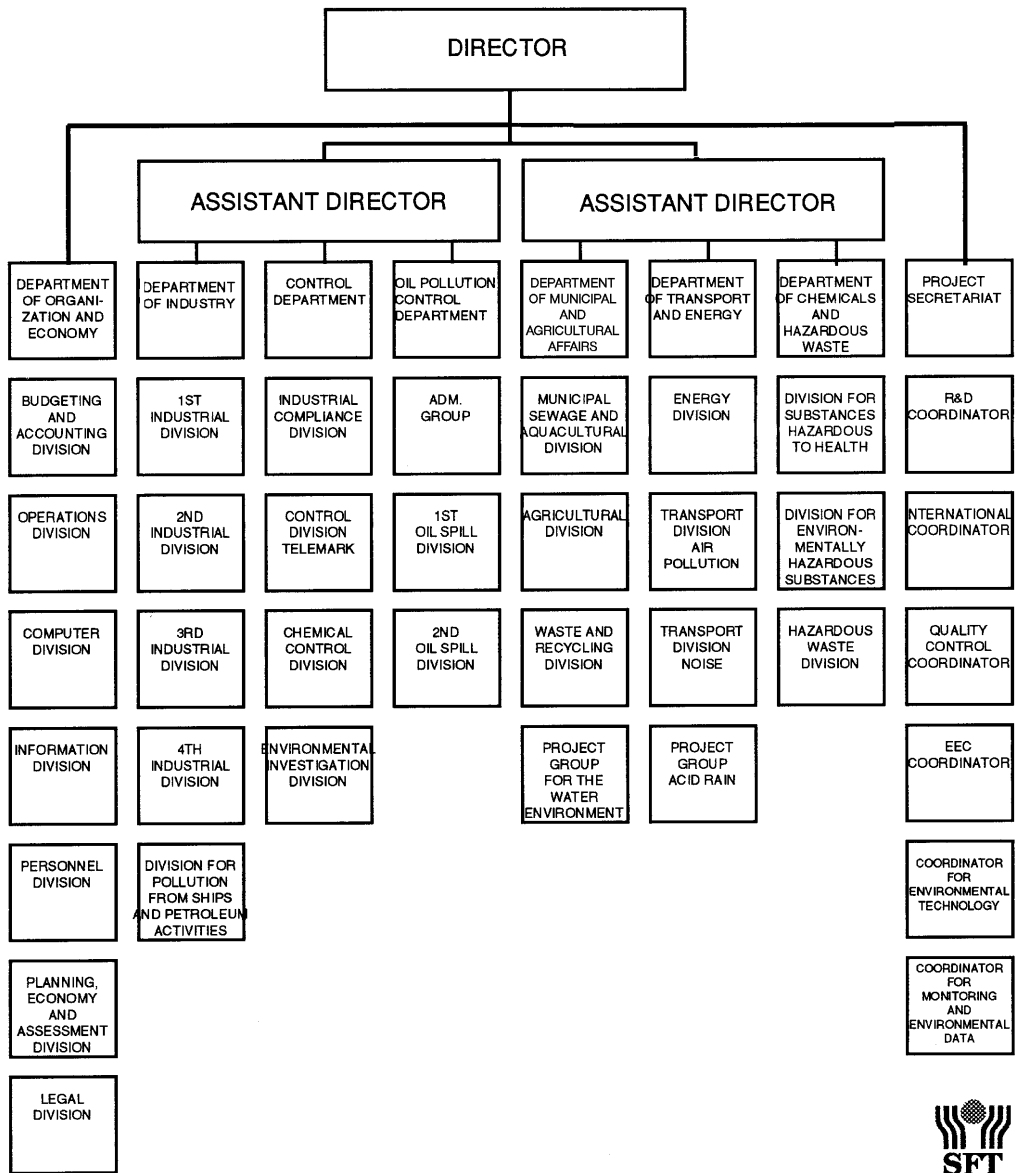


Figure 1. The organization 1994.



officers had a mixed role during such visits. They were giving information, guiding the enterprise, negotiating new technical solutions, and enforcing existing claims. For one person to separate all these different roles was of course difficult. Quite often, the enforcement role was given less priority than the informer and consultant role. We have to keep in mind that the permits given in the beginning of the 1970's were extremely detailed and the knowledge about environmental problems and the consciousness in industry was very low. This was a period where education of the industry was given first priority.

In 1983 SFT realized it needed a more professional monitoring of compliance and enforcement. A small division with 5 inspectors was established in 1986. The division sorted under the Department of Industry. The evaluation of checklists to ensure more efficient examinations during inspections was started. Compliance monitoring was also largely based on self-monitoring and reports from industry. This self-monitoring had to be checked. Until the middle of the 1980's, source testing was undertaken by a third party, but it was not systematically used. SFT had neither equipment nor competence to do source testing. About 1987 SFT decided to obtain equipment and to build up competence in order to do source testing of discharge to water, air and noise. The reason for this choice was the need for increased ability to check self-monitoring both during source testing and inspections. To be able to judge the observations made during the inspections and to discuss possible non-compliance, it is necessary to have skill about these professions. External laboratories were used to analyse samples taken.

The number of inspectors within the division increased gradually. In 1986 a regulation stating the "polluter pays principle" was passed. This imposed on industry the costs connected with granting permits and monitoring of compliance. The price list for inspections and audits with or without source testing is given in figure 2. The price depends on estimated time consumption for the task. (The enterprises are divided in four groups depending on potential discharge and the sensibility of the surroundings.)

During the second half of the 1980's, the competence in industry as well as the awareness of environmental problems were considerably improved. This opened the possibility for auditing the industries' management systems, which started in 1988. Since the beginning of the 1990's, the permits are no longer as detailed as before; the discharges limits are now given within a framework.

In the period between 1983 and 1991, the inspections were undertaken by both the inspectors and the officers responsible for issuing the permit.

The development of an inspection corps in the Department of Chemicals and Hazardous Waste has a similar history. In the beginning, the case officers did a kind of inspection. A regulation concerning the financing of inspection activity was passed in 1987. This regulation is based on the manufacturers' or importers' handling of hazardous chemicals. A fixed annual fee per product or chemical has to be paid to the state. This led to the establishment of a separate division of inspectors within the department in 1988.

Control Division Telemark has a somewhat special history. In 1975 SFT received applications for the establishment of two new petrochemical enterprises in an already densely industrialized area called Grenland. These permits were granted on the condition that a special inspection group be established. This group of three to four persons was located in the area. Their task was to monitor the air quality and compliance of local industry. The group is a part of the State Pollution Control Authority. A parliamentary resolution stated the obligation of the local industry to carry the total cost connected with this group. This group started immediately with inspections of local industry in addition to monitoring the air quality. Source testing was included in the monitoring program shortly after.

The group has increased gradually and consists today of 9 officers, 3.5 of these persons who are fully occupied with running the air monitoring network. The others monitor compliance of the local industry. The total cost of the group is approximately 5,5 mill. NOK a year (approx. 0,8 mill. U.S.\$).

In 1991 the three divisions of inspectors, sorting under different departments, were gathered in one department. At the same time, the Environmental Investigation Division was established. Monitoring compliance and enforcement was now considered a special skill. Organizing the inspector corps in this way facilitates and clarifies the role of the inspectors. The inspector has only one role

towards the inspected body, namely enforcement. An argument against this separation is that the inspectors' contact with and knowledge about the enterprises, and accordingly also their ability to reveal possible non-compliance, are reduced. This is of course true. We try to compensate for this reduction in site knowledge through the way we prepare and organize the inspections. Auditing is always done by a team of inspectors. The case officer is normally a part of the team. Thus the benefit of their knowledge is used. The separation of the tasks has given the inspector an important role in quality assurance of permits. Lack of enforcement of the permits is immediately reported back to the case officer. The same goes for irrelevant permits. During the inspections, areas for potential improvement are pointed out. This information is useful when new permits are established.

### **3 FINANCING**

The inspector corps are, as mentioned earlier, financed mainly through different types of fees. The fees cover about 80 % of the total cost of the department. Preparedness in the event of accidental discharges or industrial fires is not financed through fees. The fees are based on three different principles.

#### **3.1 Control Division Telemark**

The local industry refunds annually the total cost of the division. A bill is sent to the enterprises once a year. The cost is divided between seven enterprises according to an agreed key. The current cost is approx. 5,5 mill. NOK (0,8 mill. U.S.\$).

#### **3.2 Chemical Control Division**

Manufacturers and importers have to pay an annual fee for all chemicals that are harmful to health and environment. The annual fee is today 600 NOK per chemical. This will be changed in 1994. We intend to make the fee vary depending on quantity handled and degree of hazard. We expect an income of approx. 3,5 mill. NOK (0,5 mill. U.S.\$) in 1994.

#### **3.3 Industrial Compliance Division**

The list of the different fees are illustrated in figure 2. The principle is that the inspected body should pay the cost connected with executing the task. In order to avoid a system where the costs are invoiced according to actual time used (which might lead to many long, unproductive discussions about time consumption), the fees follow the control class of the enterprise. All enterprises with a permit are classified in one of four control classes. The classification is based on the potential discharges from the enterprise and their toxicity. The environmental sensitivity (air and water quality) of the surroundings are also taken into account.

Inspections and audits undertaken by the Environmental Investigation Division are invoiced according to the same fee system.

We expect to invoice 6,5 mill. NOK (0,93 mill. U.S.\$) through this system in 1994.

### **4 EDUCATION**

The qualifications needed by the inspectors depend on several factors. What are they going to enforce, and are the provisions detailed or do they give the inspectors room to use their judgement? What inspection activity are they expected to execute, only inspections, or are source testing and auditing included? What is the role and responsibility of the inspector? How is the knowledge and

Control class	Per inspection	Per source test/environmental audit 1)
	US Dollar	US Dollar
1	2,00	23,700/15,000
2	1,600	15,000/ 9,000
3	1,200	5,000
4	500	

**Figure 2. Fees.**

consciousness with regard to environmental questions in the inspected body? What is the background of the inspectors? All these problems have to be considered when the training program is planned.

SFT has mainly recruited people with a technical education from university as case officers and inspectors, normally at a Master of Science level. When we go back to the 1970's, we find that the case officers got a good general education through several external courses. To be honest, we sent our case officers to Sweden, where general courses dealing with purification of discharge to air and water were arranged. The legal aspects were dealt with through internal training. Little or no special training was given in monitoring compliance and enforcement.

When the special groups of inspectors was established, these skills got more attention. Foreign countries were visited, and the inspectors brought back checklists and other useful material. We got input from many countries: the United States, Germany, Sweden, and The Netherlands to mention some of them. The checklists were modified in order to fit into the Norwegian system, and our system for source testing built upon what they learned abroad. Training in these first years was to a great extent on-the-job training combined with external courses about purification techniques and other special technical topics. A set of instructions and procedures about how to perform monitoring of compliance and enforcement was developed.

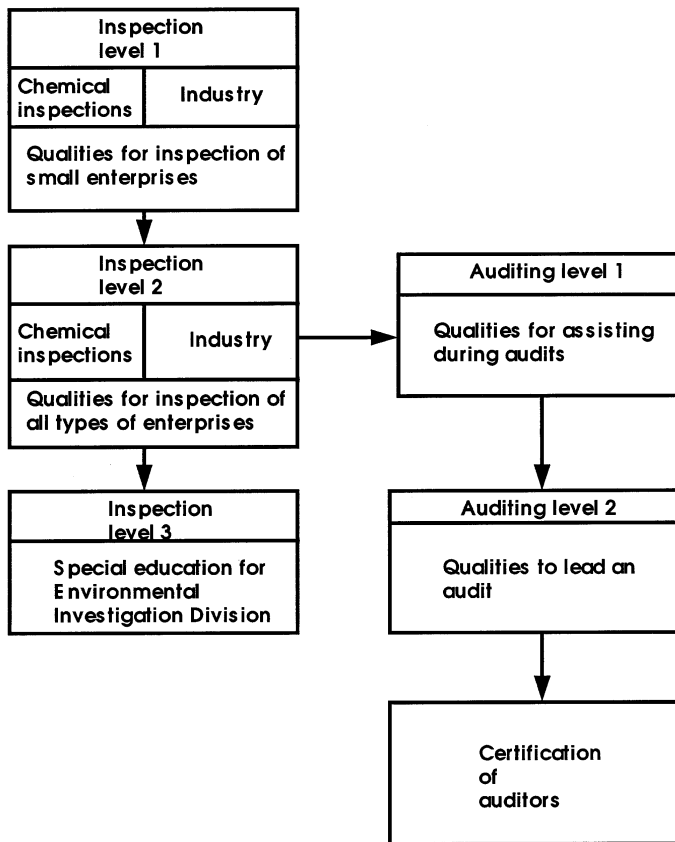
From the second half of the 1980's until today, a training program for the inspectors, covering the different inspection methods and enforcement, has gradually developed. The training program is built on internal and external courses and on-the-job training under the guidance of an experienced inspector. The steps are illustrated in figure 3.

To illustrate how the system works, the content of step one is listed:

- Study and get acquainted with the internal instructions and procedures for the inspection activity (the quality book for the department)
- Study training videos: "Safety at inspections" and "The role and responsibility of the inspector"
- Study a report and a video about "inspection of discharge to air"
- Get acquainted with the principles for the industries' self-monitoring program and the internal control
- Get first a simple education about the legal aspects
- Go with an experienced inspector on at least three inspections
- Be responsible for one inspection under the guidance of an experienced inspector.

Step one qualifies for inspecting minor, not too complicated, enterprises.

Step two extends the inspectors' knowledge about measuring discharge to air and water, taking samples and securing evidence in case of legal actions. Knowledge about technical problems in the different industries may be included. On-the-job training through inspection of more complicated enterprises under guidance is undertaken. During step 2, the first training in auditing and interviewing is given. Step two qualifies for inspection of all kinds of enterprises.



**Figure 3.** Training program.

Step three is a specialization of the inspectors in the Environmental Investigation Division. This includes the use of special equipment for sampling and communication, and the use of different data systems for obtaining necessary information as quickly as possible.

Basic knowledge in source testing and auditing is necessary in order to assist during audits. Through assisting experienced auditors, necessary experience is gained. We have both internal and external courses in auditing, but to be a good auditor it is important to get experience through real audits. We hope to get an official certification system for auditors, but this is not yet established.

Only a few of the inspectors are specialized in source testing. We intend to have three to four inspectors with competence in source testing of discharge to air, water, or noise. Their specialization builds to a great extent on external training programs.

All newcomers, no matter what level they start at in the organization, get a "godmother" or "godfather" to help them with practical and professional problems. Our experience is that this helps their start in the new job.

Individual considerations have to be taken in order to implement the training program efficiently. The training program for the inspectors is discussed at least once a year. An individual plan for each inspector should be drawn up. On the average the inspector have reserved two weeks every year for education and training. Senior inspectors use this time to broaden their competence. Just as important as time is that financing and sufficient economic resources are allocated in the budget.