

SUMMARY OF WORKSHOP: SELF-MONITORING DATA: HOW TO ENSURE ACCURACY AND INTEGRITY

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GOALS

Determine INECE's role in promoting the use of self-monitoring systems.

1 INTRODUCTION

Questions presented by facilitators:

- Why is self monitoring useful?
- How good must the data be, and how should cost of collecting the data be considered?
- Are there legal barriers or problems to collecting and/or using the data?
- What methods can be utilized to guarantee the quality of the data submitted?

2 PAPERS

- Markku Hietamaki, *Self-Monitoring of Air Emissions, Discharges to Water and Waste in Finland* (6th Conference Proceedings, Volume 2).
- IMPEL, *Report on Operator Self Monitoring*, available at <http://europa.eu.int/comm/enironment/impel>
- IMPEL, *Best Practices on Compliance monitoring*, available at <http://europa.eu.int/comm/enironment/impel>
- INECE, *Source Self-Monitoring, Reporting, and Recordkeeping Requirements: an International Comparison*, available at <http://www.inece.org>.

3 DISCUSSION SUMMARY

Markku Hietamaki began by describing the self-monitoring system in Finland. Monitoring parameters are set forth in the installation's permit which also pre-

scribes the monitoring methods to be used, the frequency, etc. The information is collected by the installation and sent into the agency. New initiatives are in progress to facilitate electronic submittal of data, including data submittal directly and in real time from the installations internal computer systems directly into the agency's data bank.

Inga Larsson said that the Swedish system is very similar to the system Markku described. Why are installations willing to self-monitor instead of relying on the regulatory agency to monitor them? Through self-monitoring the facility can demonstrate compliance with their permit and can make decisions about production levels. With this in mind, industry should quickly get feedback from monitoring system so they can quickly resolve problems. If the state is doing all the monitoring, the information can't get back to industry quickly enough to stop releases. In Sweden, there are some limits on how much information the agency can collect. For example, they can't collect production data, so it is hard to do cross checks by comparing production to emissions.

Daniel Geisbacher asked about laboratories that test the samples? Are they approved or accredited by the government or can any laboratory conduct the analysis? In Sweden only accredited laboratories can be used.

This raised the question of how "good" the information needs to be and how different programs ensure the quality of the data. One means to achieve data quality is to mandate that all monitoring use the

same methods of collection. Another is to state the quality of data collected using statistical representations of uncertainty (confidence intervals). The EU has proposed defined standards that guarantee reproducibility but not necessarily accuracy. Therefore, some representation of uncertainty is necessary.

In Australia, pollution-loading fees are collected per unit of pollution, so the government needs accurate data to determine fees. When collecting the data to determine the loading, installations must use a laboratory accredited by the national government, or, if using non-certified labs, send some split samples to certified labs to demonstrate the accuracy of the results. Nonetheless, there are concerns with clarity in applying monitoring requirements.

Inga Larsson cited another reason for using self-monitoring for collecting compliance data instead of government monitoring. In many applications, self-monitoring gets continuous data, regulators cannot. In Sweden, the system has developed since the 1940's and has become very sophisticated. The regulator and the company can judge and assess uncertainties. All installations must use the same methodology, and the regulatory authority needs to follow the same procedures to verify the quality of their own data. Donna Campbell added that self-monitoring has advantages for long-term averages and showing relationships to production.

Erik Forberg said that the way data is collected depends on what we are going to do with the data. The accuracy of data does not only depend on the accredited laboratory, but the sampling itself is more critical than laboratory work, and guidance for the sampling procedures is limited. Inspections should focus on the procedures the facility uses to collect the data, not on sampling ourselves. Davis Jones agreed that the cost of taking confirmatory samples make it difficult or impossible for

the government to regularly sample and analyze the data, so in the United States, compliance inspections also focus more on the company's procedures than independently collecting data.

Hans-Roland Lindgren suggested that self-monitoring requirements be designed to use mechanisms that industry is already utilizing for process controls. This allows them to collect the data the government needs in the most efficient way possible.

Markku Hietamaki raised the issue of the amount of detail and volume of data the government needs. The group agreed that while detailed data should be collected, the installation could submit a summary, as long as they keep details and make the base data available for review. There are additional things we can do to increase the compatibility of the data. European Union legislation is moving to deal with uncertainty, but industries are going toward collection methods.

Donna Campbell asked the group if their programs get all the data collected, or just information that shows noncompliance? In Sweden, both compliance and noncompliance is submitted to the agency. The United States also requires submittal of both types of information.

Daniel Geisbacher described the key elements in the Slovak system. Legislation requires self-monitoring through the operation permit. Facilities and the State must use approved laboratories. All laboratories use the same methods, but uncertainty still exists due to laboratory or operator error. Industry has natural incentives to hide upsets, etc. So what are the motivations for industry to report noncompliance and not hide problems? First, the state measurements provide cross check. In addition, the state can use information requests to gather additional information or require additional sampling.

Markku Hietamaki moved the con-

versation to verification of submitted data and the likelihood and consequences of falsifying data. In Finland, there is a long history with different relationships between the government, industry and the public. It is very unlikely that industry will falsify data. If they get caught, the government is forced to take very drastic actions which is much more costly than compliance. One big case in the pulp and paper industry in 1970's has led industries to publicize reports, improve methods, etc. The current system in Finland has strong monitoring requirements, frequent inspections, and, if there are still problems, the government will step in and conduct the monitoring themselves and bill the company.

The transparency of the data collection system is crucial in getting the public involved in compliance. Most companies are more frightened of headlines than penalties. Making the data public on the Internet so anyone can view it can be a crucial motivator toward compliance and pollution prevention. However, production data and sensitive information should be kept private. In Finland, the national system does contain production data and other industries can access each other's data. Sweden also has a very open system; all data is open to the public but competitors aren't that interested, since process data is not included.

In Slovak, there is free access to environmental data directly from industry to public. The owner of the data provides the data to the public; the agency does not serve that function and gets the data as the public gets it, without redistributing it as occurs in other countries. By contrast, in Finland, the agency receives the data, checks its validity, and then presents it to the public. Different data come from different sources, and there are concerns about quality and understanding of complex data. Many big companies agree that it is the authorities' role to collect and publish data,

not the role of industry.

In Australia, data is available to the public, but is rarely requested. Companies submit an annual compliance report to the agency, which then gets posted on the Web. There are severe penalties for inaccurate reports.

What are the legal barriers, if any, to collecting self-monitoring data? Inga Larrson said that in Sweden there is no problem if collecting required data, but if inspectors ask for additional information or monitoring, that information cannot be used for prosecution. However, if a legal request is made the data can be used. Donna said that the Australian legal protection from self-incrimination doesn't apply to corporations, so their information can be used against them. Erik Forberg said that in Norway, inspectors can use self-monitoring data, and can ask for as much additional information as they need. Daniel said that in Slovak, they could use the data for certain penalties such as not meeting conditions of permits. The government generally uses basic self-monitoring information from inspections for smaller cases, but collect their own data to support prosecution.

In Australia, the cost of compliance monitoring is paid by the operator, which is part of the "polluter pays" principle. This does not mean we should ask for expensive monitoring. The government should be focused only on the needs for verifying compliance and monitoring, and they should be appropriate for those needs and not excessive. To help keep the costs down, they require limited monitoring during a long period coupled with a short period of special monitoring and analysis to support the quality of regular monitoring.

These are the same principles as in Sweden; any necessary monitoring needs to be relevant to the permit. Continual monitoring may be required for such things as acidity of effluent from pulp and paper production, but only occasional

monitoring is required for something like dioxin, which is very expensive to analyze. In Sweden, the cost to the government is not an issue since the company pays for government sampling, too.

Data quality is dependent on the ultimate use of the data and purpose of collection. If the data is merely an estimate of pollutant releases, e.g. Pollution Release and Transfer Registers systems, then emission factors that may not always produce quality data may be sufficient. Continuous emission monitoring requirements are not necessary, and administrative quality checking procedures may be sufficient.

4 CONCLUSION

Only northern countries were represented in the workshop so we were hesitant to come up with action items or decisions for INECE. However, we did agree that the use of self monitoring is increasing, but may vary based on needs. Common definitions must be developed so the international community can speak with similar understanding. We also recognized that data produced by self-monitoring can be used in different purposes like in Pollutant Release and Transfer Registry (PRTR) but also in the compliance monitoring arena. Self-monitoring should be a part of training courses organised under INECE's umbrella, and INECE should help distribute and publicise case studies and examples so that countries can share experience and expand existing work to global scale.