THE SMOPIE Project: Case studies with industrial partners

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1. Summary

An important part of the SMOPIE project was the study of monitoring methods and strategies used in real workplaces. A total of five case studies in different workplaces were undertaken in close co-operation with industrial partners. The main conclusions from these studies, which were used in formulating the recommendations of the SMOPIE report, are listed below.

2. Categorisation of workplaces

A strict categorisation of exposure conditions is not considered helpful. Instead, it is more useful to focus on the common characteristics, as summarised below.

- All the workplaces studied have multiple sources of dust; these arise from the process, processing machinery and the actions of workers.

- Total containment is not practicable, and airborne dust is almost always present in the workplace.

- The level of airborne dust (and hence inhalation doses) over time is always changing. Sometimes this is predictable (e.g. due to known dusty operations), but often it is not.

- Dust levels are not uniform within the workplace. Variations should be expected and can be substantial, especially at fixed workstations such as product bagging.

- Working patterns are rarely constant. Most workers multi-task and frequently move around the workplace during the working day.

3. Monitoring strategies

- To implement ALARA in practice requires an assessment of internal dose **and** information on how this dose arises. Different monitoring techniques provide different information: a combination of monitoring methods is required to provide all the necessary information.

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- Air sampling, rather than biological sampling (or whole body counting) is the best way of assessing doses and providing ALARA information.

- Sampling errors are generally overlooked. From the case studies, a single air sample may vary significantly from the true annual average air concentration, as follows:

Sampling over 1 or more working days:	a factor of 3 or more
Sampling over 1 hour or less:	a factor of 10 or more

- Personal air sampling provides the best estimate of individual (or group) worker doses.

- Static air sampling can be used to check that doses are low, but any results should be assumed to be underestimates, and a comparison using personal air samplers should always be considered.

- Real-time dust monitoring should generally not be used as a means of determining dose. It is also only suitable for airborne dust with a predictable activity concentration (Bq/g). However, in suitable workplaces, it is capable of providing more ALARA information than any other technique.

A full description of the case studies can be found at: www.nrg-nl.com (search “SMOPIE”).