



PRODUCT STEWARDSHIP PROGRAMME

Exposure Assessments

Study Of Workplace Controls

Workplace Monitoring

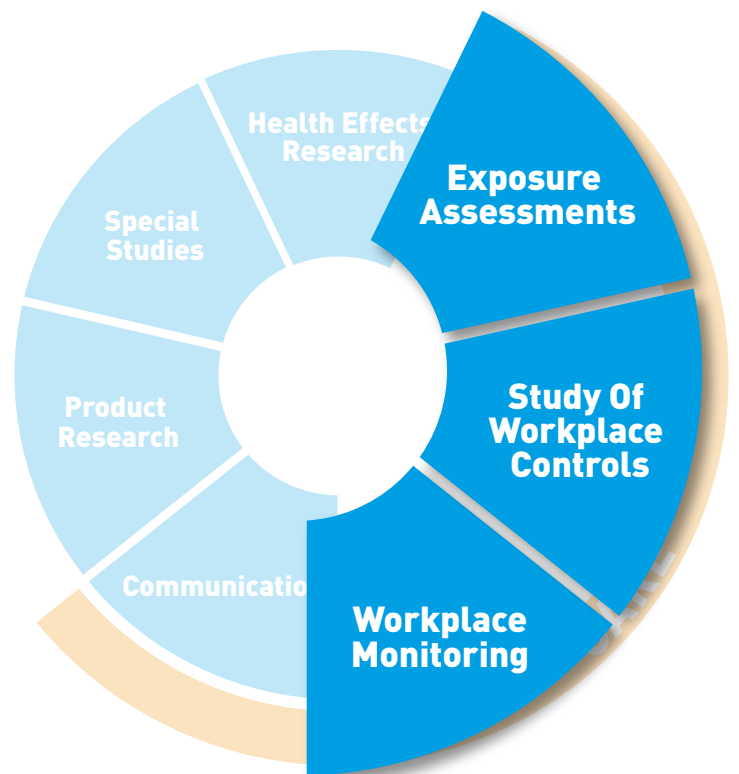
EXPOSURE ASSESSMENT,
WORKPLACE MONITORING
AND CONTROLS

ECFIA'S PRODUCT STEWARDSHIP PROGRAMME

EXPOSURE ASSESSMENT, WORKPLACE MONITORING, WORKPLACE CONTROLS

INTRODUCTION

This is a document in the ECFIA Product Stewardship Programme (PSP) series. Documents in this series provide detailed information on key PSP elements. The purpose of this document is to provide a brief description of the health effects research being undertaken by ECFIA and its member companies. A general overview of the PSP is provided in the ECFIA Action document "ECFIA's Product Stewardship Programme".



WHAT IS THE PRODUCT STEWARDSHIP PROGRAMME?

In the 1990s ECFIA, the European association of the manufacturers of High Temperature Insulation Wools (HTIW), proactively developed a comprehensive Product Stewardship Programme (PSP). Its purpose is to enable full understanding of the way that HTIW may impact workers and the environment, and to mitigate any such possible impacts. It is designed to give manufacturers, end-users and regulators knowledge about the manufacture, use, levels and health effects of HTIW in industrial settings, and to provide analysis and recommendations on the proper storage, handling, use and disposal of HTIW products.

BACKGROUND

In the HTIW industry, fibrous dust released into the air during the manufacture, use and manipulation of these materials, is the recognised hazard for which the risk of exposure is evaluated. The individuals exposed are typically professional workers in industrial settings, where exposure to fibrous dust is most likely to occur when there is direct contact with the products. End users of equipment containing HTIW are more likely to have passive exposure, as there is only indirect contact with the products.

The three main aspects of ECFIA's Controlled And Reduced Exposure (CARE) Programme under PSP are exposure assessment, workplace monitoring and workplace controls. Exposure assessment identifies the exposed population(s) and determines the number of people within those populations, who are potentially exposed. This can include general population, consumers, and occupationally exposed population(s). This assessment provides a measurement or estimation of exposure characteristics within these groups.

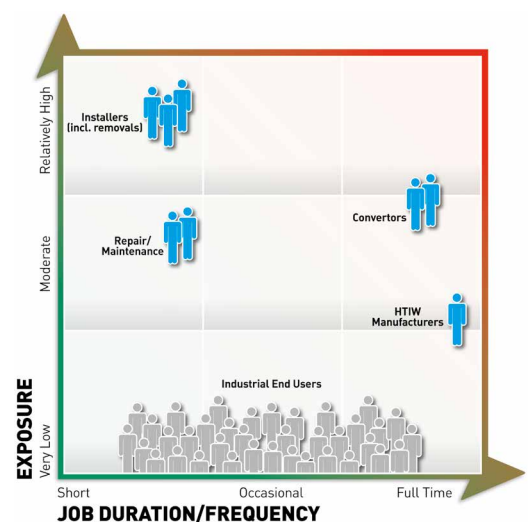
The workplace monitoring element of CARE was designed to harmonise existing workplace monitoring programmes across manufacturers, allowing data to be analysed for trends and for the information to be fed into exposure assessment and development of workplace controls. Workplace controls are evaluated as part of the workplace monitoring programme and, following the exposure assessment evaluation, are developed according to the STOP Principle.

EXPOSURE ASSESSMENT

Exposure assessment looks at what individuals are exposed to within work environments during the course of a typical day, through inhalation, ingestion or dermal contact. The principal route of exposure is inhalation of fibrous dust and the target organ is the lung. However, the skin can also be affected through dermal contact resulting in mechanical irritation (itching).

The exposure duration may be short (i.e. from minutes to hours) or long (i.e. from days to months to a lifetime), depending on the activity. The effects on health of such exposures, if any, would be considered to be a possible chronic effect on the lung and an acute mechanical effect on the skin.

The process of estimating or measuring the extent, frequency and duration of exposure, along with the number and characteristics of the population exposed, is the exposure assessment. Exposure assessment makes use of exposure monitoring and information on workplace controls to define exposure characteristics according to the frequency, duration, and level of exposure. This helps to determine who are exposed, what they are exposed to, how often are they exposed, the level of exposure, and the effectiveness of any risk management measures.



Frequency of exposure depends on the activity; for example, HTIW manufacturing is a continuous process and therefore frequency of exposure is high, whereas installation of HTIW is intermittent thus the frequency of exposure will be lower. Duration of exposure to HTIW may be short or long depending on the activity; for example, manufacturing would involve daily exposure of 8 hours or more. The level of exposure is determined by the nature of the product, the activity or task, the work environment, and the effectiveness of control measures; end users tend to have very low exposures as at this point the HTIW is contained within a piece of equipment.

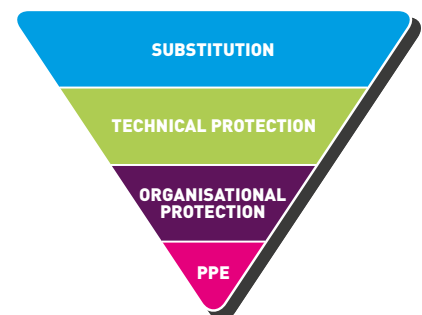
WORKPLACE MONITORING

Both internal and external monitoring is undertaken by ECFIA members: internally within manufacturing facilities and externally at selected customers. This provides data across the breadth of industrial use of HTIW and allows ECFIA members to offer follow-up advice on how to improve dust controls if levels are found to be in excess of applicable OELs (there are a range of occupational exposure limit values depending on the specific HTIW being used, its classification, and the country in which it is being used). The data collected is then anonymised and added to the central CARE database, allowing statistical analysis to be carried out. The workplace monitoring carried out under CARE is performed by Occupational Hygienists (OHs) in accordance with WHO EURO sampling methods for fibrous dust. The monitoring typically falls into one of three categories, Random Personal Sampling (RPS), Special Emphasis Sampling (SES) and Area Sampling (AS).

From a statistical point of view, RPS is the most useful as it provides a "true" representation of general workplace exposures. However, both SES and AS have their advantages; for example, AS allows the OH to obtain a background level in a plant, which is useful for high traffic areas, or to pinpoint issues with a particular workstation that may not be apparent from personal monitoring. This can be the case if multiple workstations are being used by another operator in the area where the selected operator is working. SES provides detailed information on a particular worker / workstation where a process has been changed or an unusual level of fibrous dust has been found during random sampling. Again this allows OH's to focus on the root cause of a problem and work with engineers and LEV specialists to find the right solutions.

STUDY OF WORKPLACE CONTROLS

In the process of internal and external workplace monitoring, professional OHs from ECFIA member companies study the different types of workplace control, and if necessary give advice on better practice. By visiting and monitoring a statistically relevant number of workplaces, ECFIA's OHs gain considerable knowledge and experience on different approaches to controlling fibrous dust at workplaces. Thus, during these visits, not only is the sampling data created but also the workplace controls are studied by the OH and the level of worker protection is evaluated. The monitored company site (internal or external) is then advised by the OH, using the STOP Principle on appropriate workplace controls at the different workplaces.



STOP Principle



For example, the job task of sawing vacuum-formed shapes is a well-studied practice for which the best workplace controls are achieved by applying exhaust ventilation directly at the source of emission and at the point where the cutting occurs, and also by encasing the whole sawing device. By measuring the exposure level it can be further evaluated if personal worker protection is needed. During and after the measurement the OH will advise the responsible person on necessary preventive measures and workplace controls.

SUMMARY

Risk reduction is often achieved through exposure mitigation. Therefore, knowledge of exposure is a basic prerequisite for risk characterisation and for characterising subsequent risk management strategies. Workplace monitoring and evaluation of workplace controls provides essential information for this endeavour.

The purpose of exposure assessment is to provide information about the nature of the source and route of exposure, and about the individuals who are exposed. This then informs the risk assessment and subsequent determination of risk management measures to control and reduce exposure.

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www.ecfia.eu

www.guidance.ecfia.eu

OR CONTACT US

Mail: info@ecfia.eu

Phone: + 33 6 31 48 74 26

REFERENCES

Class P, Brown RC, Alexander IC, Jubb G and Deghilage P. (1996). *Evaluation of the relation between the nominal fibre diameter of bulk refractory ceramic fibres and airborne fibre concentration (dustiness) using a laboratory shaking test box. Gefahrstoffe Reinhaltung der Luft* 56:319-321.

Class P, Deghilage P and Brown RC. (2001). *Dustiness of different high temperature insulation wools and refractory ceramic fibres. Ann Occup Hyg* 45:381-384.

Maxim LD, Allshouse JN, Deadman J, Kleck C, Kostka M, Webster D, Class P and Sébastien P. (1998). *CARE – A European programme for monitoring and reducing refractory ceramic fire dust at the workplace: initial results. Gefahrstoffe Reinhaltung der Luft.* 58(3):97-103.

Maxim, L. D., Allshouse, J., Fairfax, R. F., Lentz, T. J., Venturin, D., and Walters, T. E., 2008. *Workplace monitoring of occupational exposure to refractory ceramic fiber – a 17-year retrospective. Inhal. Toxicol.* 20, 289-309.

Rice CH, Lockey JE, LeMasters GK, Levin LL, Staley P, Hansen KR. (1997) Estimation of historical and current employee exposure to refractory ceramic fibers during manufacturing and related operations. *Appl Occup Environ Hyg.*;12:54–61.