



A MODEL FOR MONITORING EXPOSURES FROM CHEMICAL AGENTS IN NEW ZEALAND WORKPLACES

Position Paper

Authorisation

This Position Paper has been authorised by the NZOHS Council

Contact

admin@nzohs.org.nz

Table of Contents

Position Paper	1
Position Paper for the New Zealand Occupational Hygiene Society to adopt EN 689:2018 as a model for monitoring exposures to chemical agents in workplaces	3
Executive Summary.....	3
New Zealand Occupational Hygiene Society	4
NZOHS Position Papers	4
Introduction	4
EN 689	5
Why a monitoring strategy should be used.....	5
Why adopt EN 689?	6
Improving business relationships	6
NZOHS Recommendation	7
Bibliography	8

Position Paper for the New Zealand Occupational Hygiene Society to adopt EN 689:2018 as a model for monitoring exposures to chemical agents in workplaces

Executive Summary

This document is an initiative of the New Zealand Occupational Hygiene Society (NZOHS).

The Council of the New Zealand Occupational Hygiene Society has agreed to adopt European Standard EN 689:2018 “Workplace exposure - Measurement of exposure by inhalation to chemical agents - Strategy for testing compliance with occupational exposure limit values” as a good practice model for monitoring chemical agents in the workplace.

EN 689:2018 deals with the measurement of exposure to chemical agents in workplace atmospheres. It covers measurement strategies for comparison of workers exposure with workplace exposure standards (WES).

The strategy in this document gives procedures for occupational hygienists to overcome problems of variability using a relatively small number of measurements with a high degree of confidence so that workers are unlikely to be exposed to levels exceeding the WES. It also covers the need for occupational hygienists to conduct a basic characterisation in order to assemble all relevant information on workplace factors and on the exposure.

New Zealand Occupational Hygiene Society

The New Zealand Occupational Hygiene Society is the association that represents professional occupational hygienists in New Zealand. Occupational hygiene is described as the science and art of anticipation, recognition, evaluation and control of hazards in the workplace and the environment.

Occupational hygienists specialise in the assessment and control of chemical, physical and biological hazards.

Therefore, the NZOHS has a keen interest in the ensuring that methodology for monitoring exposures from chemical agents in the workplace follows good practice guidelines, as its members are the professionals most likely to be asked to evaluate any exposure risks through measurement.

The Society is an Incorporated Society managed by an elected governing Council. The NZOHS is also a member of the International Occupational Hygiene Association (IOHA) and the Health and Safety Association of New Zealand (HASANZ).

The objectives of the Society are aimed at improving and protecting workers health throughout New Zealand.

More information is available at our website – <http://www.nzohs.org.nz>

NZOHS Position Papers

The NZOHS is not a standards setting body. Through its Position Papers the NZOHS seeks to provide relevant information on areas of interest to its members. The information contained in a Position Paper is neither exhaustive nor exclusive to all circumstances or individuals. The existence of an NZOHS Position Paper does not imply that there are no other ways to produce, test, measure, purchase, market, or provide other goods and services related to the scope of the adopted position. Furthermore, the viewpoint expressed at the time a Position Paper is approved and issued is subject to change brought about through developments in the state of the art of occupational hygiene. Every NZOHS Position Paper will be subjected to review at least every ten years. When a document is more than ten years old and has not undergone a revision process, it is reasonable to conclude that its contents, although still of some value, do not wholly reflect the present state of the art. The NZOHS advises all its Members to carefully and independently consider each recommendation prior to adoption and/or implementation. The NZOHS takes great care in adopting Position Papers and official statements and reserves the right to rescind or modify its position papers and official statements at any time.

Introduction

As professional occupational hygienists we are often challenged by clients or employers as to how many samples should be carried out and if it should be for health or just compliance. We also get asked to do all the sampling on a single day which does not allow for variability in exposure that could occur due to the seasons, climatic conditions or other spatial or temporal natures.

Trying to get clients or employers to understand the need, and justify the costs associated, for conducting a robust monitoring strategy has been a constant struggle for hygienists. There is no New Zealand clearly defined way to show that a single measure or a number of measurements may be insufficient to reliably demonstrate compliance with the Workplace Exposure Standard (WES).

Over the years a number of exposure assessment documents have been created. They have all, to some extent, struggled with representativeness, small sample sizes and exposure variability. Some have focused on personal sampling when a basic survey would have shown that exposures were not

under control and the business should go straight to control, potentially saving them money. It is a constant challenge trying to explain to some companies that their exposures are so high they do not need personal sampling and the delays involved, but should go straight to control then have sampling carried out to check the controls work. Many companies are still fixated on a single number to show they are compliant and fail to understand the science behind monitoring and the need for statistical testing.

Under our Code of Ethics, we have a responsibility to exercise our profession in an honest and competent manner in accordance with the recognised principles of Occupational Hygiene. This acknowledges that the life, health and well-being of individuals depend on their professional judgement and that we should conduct our work in accordance with agreed standards of quality assurance.

We also have to manage and administer our professional services to ensure a high standard of sound and reliable reporting, which records and explains the results obtained and the conclusions drawn from them.

How can we do all this around the exposure of workers to chemical hazards and say with certainty that it does not exceed the WES when business or employers can place so many restrictions on us without scientific justification.

The Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 states when exposure monitoring is required and describes some of the skills sets needed to carry this out (Regulation 32). It also requires that exposure monitoring be carried out at appropriate intervals but does not clarify what is an appropriate interval, EN 689 suggests appropriate intervals depending on the results when compared to a WES.

So, as compliance testing needs to be based on sound science/evidence and our ethics cover this area so we are responsible and accountable for using good quality compliance testing. To this end EN 689 can be a helpful tool in the decision-making process for monitoring chemical exposures.

EN 689

A European Technical Committee has prepared, had approved and published European Standard EN 689:2018 which has replaced EN 689:1995.

There have been a number of changes in the new document including:

- The introduction of periodic measurements

- More flexibility in measurement numbers than the BOHS/NVVA systems had

- More pragmatism in when or when not to sample, how to handle levels below the limit of quantification, small sample sizes and exposure variability

- A definition of appraisers for chemical exposure monitoring

Why a monitoring strategy should be used

To assess the exposure of workers to chemical hazard and say with certainty that it does not exceed the WES, it would require measuring the exposure of each worker every working day, year-round. Unfortunately, this approach is not possible for many hazards including chemicals because of diversity, limits of measurement techniques and costs.

Performing representative measurements of occupational exposure to chemical agents can also be difficult due to variability of exposure. This strategy provides methodology to deal with this.

A single measure or even several below the WES may be insufficient to reliably demonstrate compliance with the WES as statistical tests could not be applied. So, this strategy can be used to justify a minimum number of samples to a client or employer.

Where basic characterisation shows that exposure is likely to be higher than the WES then it recommends that risk exposure is reduced by risk management measures before a full survey is carried out for compliance testing. This is a basic principle of good risk management but it can be a difficult idea to get clients or employers to understand when they are fixated on compliance with a WES. The strategy in this standard could be used as an aide to help others understand why a basic characterisation is enough.

Why adopt EN 689?

This European standard specifies a strategy to perform representative measurements of exposure by inhalation to chemical agents in order to demonstrate the compliance with occupational exposure limit values (OELV's), our WES's. It is not applicable to WES's with reference periods less than 15 mins.

The strategy described in the standard gives a procedure to perform a relatively small number of exposure measurements to demonstrate with a high degree of confidence that workers are not likely to be exposed to concentrations higher than the WES considering the variability of exposures. This can help businesses engaging a hygienist to understand why we need to do a number of samples over a period of time.

It gives guidance on when measurements are advisable or if other approaches of assessment may be used.

It also has informative information on how to deal with exposures below the limit of quantification.

This strategy deals not just with constant exposure over an 8-hour working day but looks at a variety of other situations we can commonly incur. For example, occasional exposures or irregular exposures over time/tasks.

It also defines appraisers as persons who are sufficiently trained and experienced in occupational hygiene principles, working and measurement techniques, to conduct the part of the assessment they are performing according to the state of the art. This aligns to the competent person description in Regulation 32 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016.

Improving business relationships

Member of the NZOHS may also find this document useful in explaining to businesses why they need a proper sampling strategy and what it should consist of. The reason we need more than one sample and when resampling should be carried out. This can help business in their risk management systems as well as understanding that compliance means more than one random sample.

The strategies can be used to show a company how through a good monitoring programme they can expect to be complaint in the future not just on the one day monitored.

It can be used to show business why, at times, there may be no need to carry out air sampling as risks are low or so high they should go straight to control and not wait on results from monitoring, sample analysis and interpretation.

NZOHS Recommendation

The NZOHS Council has recognised EN 689:2018 “Workplace exposure - Measurement of exposure by inhalation to chemical agents - Strategy for testing compliance with occupational exposure limit values” as a good practice guide.

The NZOHS position is that exposure monitoring, for airborne chemical agents, to test compliance with workplace exposure standards conducted by professional occupational hygienists should follow industry good practice and that is, at the time of publication, the strategy set out in EN 689.



Derek Miller
President NZOHS

Bibliography

1. European Standard EN 689:2018 “Workplace exposure - Measurement of exposure by inhalation to chemical agents - Strategy for testing compliance with occupational exposure limit values” as a good practice model for monitoring chemical agents in the workplace. – Approved by CEN 2 March.
2. Testing compliance with Occupational Exposure Limits for Airborne Substances: British Occupational Hygiene Society and Nederlandse Vereniging voor Arbeidshygiene; September 2011.
3. Health and Safety at Work (General Risk and Workplace Management) Regulations 2016.
4. WorkSafeNZ Fact Sheet: Exposure monitoring under the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016; April 2016.