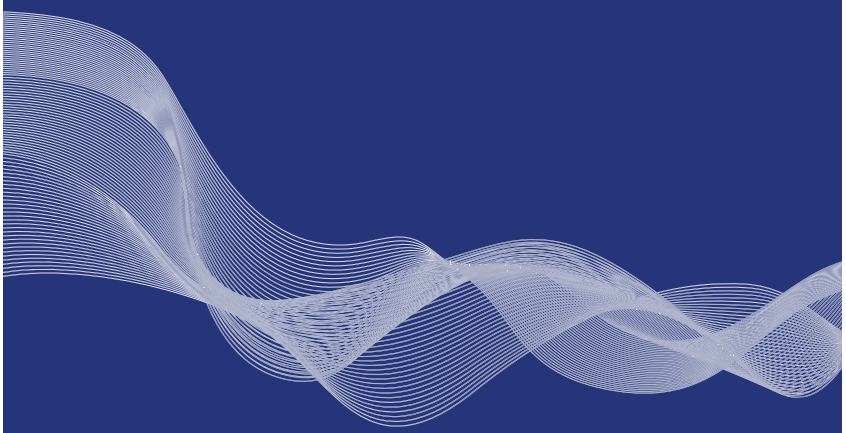
SKC

An Introduction to Air Sampling



An Introduction to Air Sampling

Health and Safety in the workplace involves a wide range of potential hazards

Airborne hazards from gases, vapours, dusts and fibres can all cause potentially life threatening illnesses affecting the lungs, kidneys and liver.

Air sampling is a method of monitoring worker's exposure to these potential hazards.

Air sampling is relevant to almost every industry, from flour dust exposure in a bakery to chemical vapour exposure in a factory.

Every year in the UK around 13,000 people die from diseases which were caused by the work that they do, or used to do. By comparison, in 2015/2016 only 144 workers were killed at work due to fatal injuries.*

By consistently measuring the concentration of airborne contaminants, steps can be taken to reduce worker's exposure, thereby helping to prevent chronic respiratory diseases such as asthma, as well as occupational cancers.

*Source HSE website

For further information on SKC products and services, please contact SKC technical sales on **T: 01258 480188** or **E: enquiries@skcltd.com**

What is Air Sampling?

Air sampling is carried out to ensure that workplace or environmental air is meeting regulatory standards and to help Occupational Hygiene and Health & Safety professionals assess employee exposure to airborne hazards.

Regulatory authorities, such as the HSE in the UK or OSHA in the USA, apply limits for exposure to most substances deemed hazardous to worker's health.

The HSE terms these limits Workplace Exposure Limits (WELs) and they are defined as the maximum concentration of a hazardous airborne substance that a worker may be exposed to over a defined period such as an 8-hour shift.

WELs apply to anybody working within an environment where hazardous substances are present, and are based on personal sampling, not static / environmental – however, this does not mean that limits cannot apply under these circumstances.

WELs are published in EH40, a guidance document which is freely available to download from the HSE's website below.

www.hse.gov.uk

Where there is a WEL there will be an approved method of sampling written by a regulatory authority such as the HSE. Where there is no specific method for a particular hazard, there are often methods for the type of contaminant – such as MDHS 14/4 for general dusts.

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Types of contaminant

Control of Substances Hazardous to Health Regulations 2002 (COSHH) covers substances that are hazardous to health.

Most hazardous materials fall into one of three main categories: dusts and particulates, gases and vapours, or bioaerosols. A site may well have several types of contaminants.

Dusts:

- Present in almost every industry
- Risks to health from inhalation exposure, but also other hazards such as risk of explosion
- Examples include dusts from wood, flour, metals and silica

Fibres:

- Longer than they are wide
- Can be highly toxic due to size, shape and a tendency to remain in the lungs
- Examples include asbestos, ceramic fibres, or mineral fibres

Gases and Vapours:

- Vast range of potentially harmful and explosive gases and vapours across industries
- Can be harmful to the body due to their toxicity leading to acute or chronic conditions
- Presence of non-toxic gases can also be dangerous due to displacement of oxygen
- Can also be harmful through skin absorption

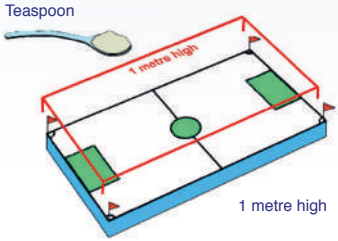
Bioaerosols:

- Can be present in many environments, including waste management, recycling facilities and composting sites
- Could be infectious, produce toxins, or trigger an immune response
- Examples include airborne viruses, fungal spores, bacteria and pollen

Measurements

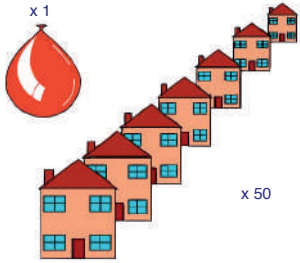
Once measured, the contaminants are expressed as milligrams per cubic metre (mg/m^3) for particulates and parts per million (ppm) for gases.

For instance, the maximum workplace exposure limit for total (inhalable) dust is $10mg/m^3$ over an 8 hour period.



1 milligram per cubic metre (mg/m^3) is approximately the same as one teaspoon of dust spread over the area of a football field to a height of one metre.

1 part per million (ppm) is approximately the same as the contents of a party balloon compared to the volume of air inside 50 three bedroom houses.



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Help and Advice

If you have never carried out air sampling before, or you are unsure of the workplace exposure limits, there is a range of help available.

SKC has over 50 years of experience in the industry and offer a comprehensive range of products to serve all sampling requirements.

We offer a practical training course on the use of air sampling equipment, helping you to get the most from your sampling regime.

Visit our website for more information or to request a free catalogue with sampling guides for many hundreds of chemicals.

www.skcltd.com

Further help on-line

Visit **www.skcltd.com** and download a variety of information including:

- Step by Step Guides
- Catalogue
- Sampling Guides

Use our popular Hazard Search

We have compiled an online database of monitoring methods for a wide range of workplace and environmental hazards. To get started, type the name or part-name of your hazard into the box above. Alternatively, you can search alphabetically by clicking the letter of your choice, or you can enter the CAS number directly.

Helpful resources

Health & Safety Executive Information
www.hse.gov.uk

British Occupational Hygiene Society
www.bohs.org

MDHS publications
www.hse.gov.uk/pubns/mdhs

NIOSH
www.cdc.gov/niosh

OSHA
www.osha.gov

One of the best resources for advice on legislation and potential contaminants is the Health and Safety Executive.

You can visit them online at **www.hse.gov.uk** where you can find guidance specific to your industry, information on COSHH, and plenty of other resources to help you assess your workplace.

Acronym	Name in Full
ACOP	Approved Code of Practice
ASTM	American Society for Testing and Materials
BOHS	British Occupational Hygiene Society
COSHH	Control of Substances Hazardous to Health
EPA	Environmental Protection Agency
HSE	Health and Safety Executive
HSL	Health and Safety Laboratory
IOM	Institute of Occupational Medicine
IS	Intrinsically Safe
ISO	International Organisation for Standardisation
MDHS	Methods for the Determination of Hazardous Substances
MEL	Maximum Exposure Limit
m^3	Cubic Metre (1000 litres)
mg	Milligram
mg/m^3	Milligram per Cubic Metre
NIOSH	National Institute for Occupational Safety and Health
OEL	Occupational Exposure Limit
OES	Occupational Exposure Standard
OSHA	Occupational Safety and Health Administration
ppb	Parts per Billion (1/1,000 of ppm)
ppm	Parts per Million
ppt	Parts per Trillion (1/1,000,000 of ppm)
PUF	Polyurethane Foam
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
UKAS	United Kingdom Accreditation Service
WEL	Workplace Exposure Limit

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