

# Chemicals and Materials

## Control Banding

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## What is control banding?

Control banding is an assessment method that can be used to manage workplace risks. It is a process that matches, for example, a control measure (e.g., ventilation, engineering controls, containment, etc.) to a range or "band" of hazards (e.g., skin/eye irritation, very toxic, carcinogenic, etc.). The control banding method also groups chemicals according to similar physical or chemical characteristics, how the chemical will be handled or processed, and what the anticipated exposure is expected to be. The method then determines a set of controls chosen to help prevent harm to workers.

In general, bands represent:

- health hazards or risk (e.g., skin/eye irritation, carcinogenic, etc.),
- exposure potentials (e.g., quantity used, or characteristics of the products),
- control measures (e.g., types of ventilation, engineering controls, containment, etc.).

Control banding was originally developed by the pharmaceutical industry as a way to safely work with new chemicals that had little or no toxicity information. These new chemicals were classified into "bands" based on other more-studied materials' toxicity and anticipated safe work practices, taking into consideration exposure assessments. Each band was then aligned with a control scheme. For this reason, control banding is commonly associated with chemical exposures but similar systems are available for other workplace hazards.

The overall goal of control banding is to help workplaces by providing an "easy to understand" and "easy to apply" approach to controlling hazards. The control banding method is generally meant to be used by small- and medium- sized workplaces that have limited expertise in workplace health and safety, industrial hygiene, or chemical control.

Control banding is often used to determine control measures when occupational exposure limits are not known.

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## How, in general, does control banding work?

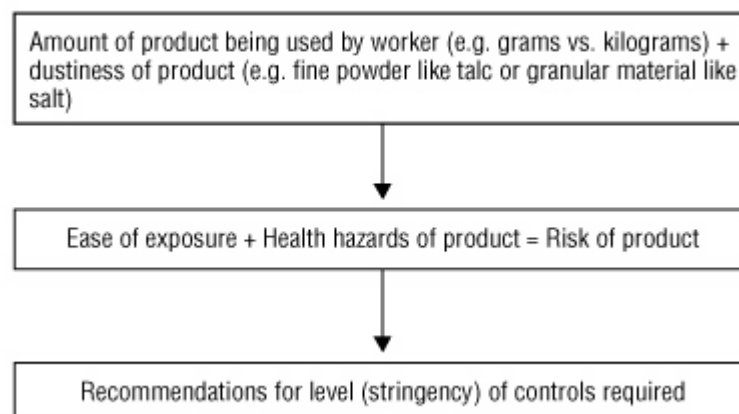
Control banding is based on the idea that while there are many chemicals that workers can be exposed to, in practical terms, there are only a limited number of common approaches to hazard control to protect workers. These approaches are grouped into levels based on how much protection the approach offers (with "stringent" controls being the most protective). The greater the potential for harm, the greater the steps needed for control.

Products are first placed into a "hazard band". Factors used to decide which band a product belongs to include:

- Toxicity of the product (how "poisonous" a product is)
- Ease of exposure (e.g., how easy it is for the product to get into a worker's body such as how fine (dusty) or volatile a product is (how much will enter the air))
- Type of work process being used (e.g., grinding vs. transferring)
- Duration of exposure (amount of time doing the task)
- Quantity of product used in task (small vs. large amounts)

Once the hazard band is determined, a control measure strategy is suggested. A product with greater health hazards and higher exposure potential will have more stringent controls than a product with low health hazards that is unlikely to come in contact with or enter a worker's body.

Example: Process Control Banding



Adapted from: Control Banding: Pharmaceutical Caterpillar to Mainstream IH Butterfly By Ernest Sullivan, PhD, CIH, ROH, CChem and Om Malik, PhD, CIH, ROH, PEng AIHA Diplomate Article

Note: For more information on hazard versus risk, see the OSH Answers on [Hazard and Risk](#).

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## Is there more than one control banding method?

Yes. Over the years, several control banding methods have been developed. Examples include the pharmaceutical industry method, a "risk prioritization" method, and the United Kingdom's Health and Safety Executive's COSHH Essentials small business method. (COSHH stands for "control of substances hazardous to health".)

Of these models, the COSHH Essentials method is the most publically available, and it is specifically designed for small and medium sized businesses.

Health and Safety Executive's website provides an [overview](#) of COSHH Essentials, as well as the [COSHH e-tool](#) itself.

To use this tool, first gather the following information:

- Type of task (e.g., mixing liquids, filling a sack, cleaning, etc.).
- How often the task will be performed.
- How long it takes to complete the task.
- The amount of product used during the task.
- The hazard classification and the risk/hazard phrases. (Tip! In most cases, you will find this information on the product's safety data sheet (SDS).)
- The volatility or dustiness of the chemical or product (e.g., how much of the product can enter the air). This information may be asked, for example, as what is the boiling point or vapour pressure. (Again, you can often find this information on the SDS.)

Once you have entered your data, COSHH will provide, where possible:

- a recommended control band (control approach),
- advice on controlling risk from the chemical used in the specified task, and
- written guidance and documentation as a result of the assessment.

Please see the OSH Answers [Hazard Control](#) for general explanations of control measures.

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## What are some advantages of control banding?

Control banding offers a way to assess risks and choose relevant control measures to reduce exposures in workplaces. It also allows for control recommendations to be made for products that do not have occupational exposure limits.

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## What are some limitations of control banding?

Control banding as a method is not fully validated yet - there is need for continued testing of control recommendations and the actual exposure to workers. There is no universally adopted (i.e. no single "correct") method of control banding, and each method has limitations. As such, employers should still monitor and evaluate any control measures used in the workplace.

Recommendations developed by a control banding method may need to be reviewed by a health and safety professional to make sure that the control strategy is appropriate, adequately designed, properly installed, and maintained to keep worker exposure within acceptable limits. Monitoring is also required to check that the control methods are working properly.

Not all types of hazards are covered by any one control banding method. It is essential to make sure that the method you are using was created to cover the hazards you wish to control. For example, safe handling of certain chemicals with a specific toxic effect may be covered, but flammability and reactivity hazards may not have been addressed by the control banding system. The recommendation for these types of hazards is to seek expert advice for appropriate control strategies.

There is also some risk in generalizing hazards when using control banding. For example, a product with an annoying odour but low toxicity may need local exhaust for employee comfort, even though the control band may suggest that dilution ventilation would be adequate.

There may also be errors when identifying hazards such as not enough toxicity data, incorrect data, incorrect assumptions (e.g., that chemical structural and physical differences within a group mean similar adverse effects) or an inaccurate estimation of exposure assessment.

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## Is occupational exposure banding the same as control banding?

Occupational exposure banding is a process that has been proposed by the National Institute for Occupational Safety and Health (NIOSH). [Occupational exposure](#) banding is intended to be used in situations where information on an occupational exposure limit is not available. The process uses chemical exposure data to categorize chemicals into 1 of 5 bands. It does not provide recommendations, for example, on for safe handling and use.

According to NIOSH:

“The proposed NIOSH occupational exposure banding process guides a user through the evaluation and selection of critical health hazard information to select an Occupational Exposure Band (OEB) from among five categories of severity. For OEBs, the process uses only hazard-based data (e.g., studies on human health effects or toxicology studies) to identify an overall level of hazard potential and associated airborne concentration range for chemicals with similar hazard profiles. While the output of this process can be used by informed occupational safety and health professionals to make risk management and exposure control decisions, the process does not supply such recommendations directly.”

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