



Carcinogens in the Workplace

Educational Sheet

Target group

Third-grade secondary and higher education students who want to learn more about safety and health at work.

Equipment

A computer with an Internet connection for one or two students. Open the game via the QR-code or via stopcarcinogens.be

Duration

One to two class hours.

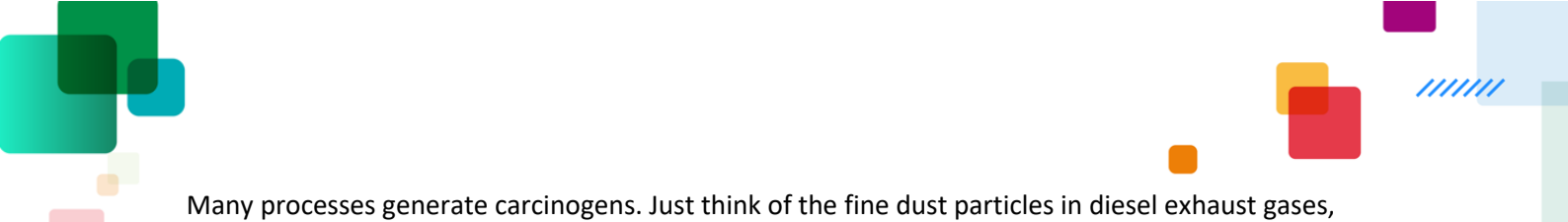
Learning goals

The game addresses the following learning goals:

- Students know that the presence of carcinogenic substances in the workplace constitutes a health risk for workers.
- Students know that it is the employer's responsibility to look after the workers' health.
- Students recognise risk situations in different work contexts.
- In a given risk situation, students can think of preventive actions to combat the danger or reduce the risk.
- Students understand the STOP principle; they know the meaning of the letters in the acronym and know that the order of the letters corresponds to a hierarchy of preventive actions.
- Students can explain in their own words and/or with examples what substitution, technical measures, organisational measures and personal protective equipment are.

About the game

Every year, more than 120,000 Europeans are diagnosed with a work-related cancer and almost 80,000 people die from cancer caused by exposure to carcinogens while working. This is 53% of the total number of work-related deaths.



Many processes generate carcinogens. Just think of the fine dust particles in diesel exhaust gases, wood dust or welding fumes. It is therefore important for workers and employers to know where the risks lie in the workplace and how to take the necessary preventive measures.

The organisation of a safety policy and the implementation of appropriate preventive measures are legal obligations for the employer. One of the most important principles the employer should keep in mind in this respect is the STOP principle. This prevention principle establishes a hierarchy of preventive measures designed to minimise dangerous exposure to carcinogens. The steps to follow are:

- **Substitution**, where the use of a dangerous product or carcinogenic substance is avoided by replacing it with a substance that is not or less dangerous to workers' safety and health;
- **Technical measures**, to implement in order to prevent or reduce the release of carcinogenic substances likely to present a risk to the health and safety of workers in the workplace. Examples include working in closed systems, using appropriate extraction at the source of the risk or ventilation;
- **Organisational measures**, such as providing reserved workplaces for the use of dangerous substances, limiting the number of workers or working time in which a worker can be exposed, appropriate and regular maintenance of the workplace, providing appropriate information and, above all, training;
- **Personal protective equipment**, to be used when exposure cannot be avoided by other means, e.g. respiratory protection, gloves, masks, protective clothing, etc.

Employers must apply the STOP principle when developing a safety policy, while workers must comply with the instructions imposed. This is how you STOP exposure to carcinogens and thus work-related cancer cases. Even future workers should already be aware of this. This will equip them to enter the workplace in a healthy way and take quick action.

In this game, students are introduced to various workplace situations where workers may come into contact with carcinogenic substances. At the start of the game, they are first shown a video clip explaining the dangers of carcinogenic substances, the importance of preventive measures and the application of the STOP principle.

Next, the students are invited to take on the role of prevention advisors and look for possible dangers and preventive measures. To do this, they use the STOP principle applied to realistic work situations (on a construction site, in a hospital and in a factory).

How do you play the game?

When you click on a location, you first get a short video as an introduction. Then you can walk around in several rooms by clicking on the arrows. Each time, look around carefully and click on all dangerous situations. These are located behind a number of question marks. When you have found all the risks, you get an overview of the correct workspace with the correct information.



Learning tips

- The accompanying **information booklet** can be useful for both students and teachers to delve further into the subject of carcinogens in the workplace. The **presentation** (which can be customised) is also a useful tool for introducing the topic in class before the students start playing.
- Make sure that the game is more than a one-off fun activity. To do this, **integrate the topic permanently** into a broader project on safety and health (at work/school) or refer to the topic in other subjects (for example, in science lessons, in a speaking or writing assignment in Dutch/French or when dangerous situations arise during practical work). Be sure to also include the topic when students are on **placement**. This can be done by bringing up the subject during an intervision session or by explicitly asking the question in the placement report.
- Check that students have understood the subject matter using an appropriate **evaluation sheet**. This sheet includes a sample test (and a grading key) of 12 multiple-choice questions, based on the information booklet. Other evaluation forms are also possible, such as a traditional written test with a question on the STOP principle and its application in a case study, or a creative assignment in which students draw a picture, record a video or build a safe room/machine/outfit.
- The game can also be **played together in class** using an interactive whiteboard or beamer. The advantage of this is that the students discuss the questions with each other before clicking on an answer. The disadvantage is that the effect of the game may be weakened by the fact that the students do not control the game themselves. To avoid this, let the students take it in turns to control the window, in order to keep the group engaged and motivated.
- Engage students in a **discussion** about the game and the topic. What surprised them? What did they find difficult? What will they remember for their future work situations?



More information

- This gamification is part of the "Roadmap on Carcinogens", a European campaign aimed at reducing exposure to carcinogens in the workplace. You can find more information and tools on <https://roadmaponcarcinogens.eu/>
- For more information and tools on safety and health at work in Europe, you can visit the website of the European Agency for Safety and Health at Work (EU-OSHA): <https://osha.europa.eu/en>