CheSSE
Chemical Safety in Science Education

Legislative background

Module 1

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Stockholm University

UNIVERSITY OF HELSINKI

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Important acronyms

- Occupational Safety and Health Act (738/2002).
- REACH regulation (EC No 1907/2006).
  - **R**egistration, **E**valuation, **A**uthorisation and **R**estriction of **C**hemicals
- CLP regulation (EC No 1272/2008).
  - **C**lassification, **L**abelling and **P**ackaging of substances and mixtures
- Based on the United Nations' **G**lobally **H**armonised **S**ystem (GHS)

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REACH and ECHA (1/3)

- REACH is a regulation of the European Union, adopted to improve the protection of human health and the environment from the risks that can be posed by chemicals, while enhancing the competitiveness of the EU chemicals industry.
  - https://echa.europa.eu/regulations/reach/understanding-reach

- ECHA is the European Chemicals Agency which manages REACH, located in Helsinki (Telakkakatu 6)

ECHA
EUROPEAN CHEMICALS AGENCY

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REACH and ECHA (2/3)

- "In principle, REACH applies to all chemical substances; not only those used in industrial processes but also in our day-to-day lives, for example in cleaning products, paints as well as in articles such as clothes, furniture and electrical appliances. Therefore, the regulation has an impact on most companies across the EU."
- "To comply with the regulation, companies must identify and manage the risks linked to the substances they manufacture and market in the EU. They have to demonstrate to ECHA how the substance can be safely used, and they must communicate the risk management measures to the users."
  - https://echa.europa.eu/regulations/reach/understanding-reach

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REACH and ECHA (3/3)

- "Companies need to register their substances and to do this they need to work together with other companies who are registering the same substance. If the risks cannot be managed, authorities can restrict the use of substances in different ways. In the long run, the most hazardous substances should be substituted with less dangerous ones."
  - https://echa.europa.eu/regulations/reach/understanding-reach

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CLP regulation

- "One of the main aims of CLP is to determine whether a substance or mixture displays properties that lead to a hazardous classification."
- "CLP sets detailed criteria for the labelling elements: pictograms, signal words and standard statements for the hazard, prevention, response, storage and disposal, for every hazard class and category. It also sets general packaging standards to ensure the safe supply of hazardous substances and mixtures."
  - https://echa.europa.eu/regulations/clp/understanding-clp

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REACH and CLP enforcement in Finland

- In Finland, the Finnish Safety and Chemicals Agency (Tukes) attends to the enforcement tasks within chemical products surveillance, the European Union REACH and CLP Regulations, biocides legislation, and the risk assessment, approvals and registration of plant protection products.
- Turvallisuus- ja kemikaalivirasto (Tukes):
  - https://tukes.fi/en/chemicals

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Occupational safety and health act (no. 738/2002) (1/7)

- "**Section 1** The objectives of this Act are to improve the working environment and working conditions in order to ensure and maintain the working capacity of employees as well as to prevent occupational accidents and diseases and eliminate other hazards from work and the working environment to the physical and mental health, hereinafter referred to as health, of employees."
  - Links
    - Finnish version
    - Swedish version
    - English translation

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Occupational safety and health act (no. 738/2002) (2/7)

"This Act applies to work carried out under the terms of an employment contract."

"In addition, this Act applies, for example, to work done by students in connection with education."

In practice, the provisions of this Act regarding employer and employees are applied to the university and students, respectively.

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Occupational safety and health act (no. 738/2002) (3/7)

Employers' obligations (1/2):

- Employers are required to take care of the safety and health of their employees.
- The employer must analyze and identify the hazards and risk factors caused by the work.
- Employer must give their employees necessary information on the hazards and risk factors of the workplace.

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Occupational safety and health act (no. 738/2002) (4/7)

Employers' obligations (2/2):

- Employer must ensure that the employees receive an adequate orientation to the work.
- Employer must ensure that the employees are given instruction and guidance in order to eliminate the hazards and risks of the work.
- Employer must acquire and provide for use by employee appropriate personal protective equipment.

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Occupational safety and health act (no. 738/2002) (5/7)

Employees' obligations (1/2):

- Employees must follow the orders and instructions given by the employer and otherwise follow order and cleanliness.
- Employees must also take care of both their own and the other employees' safety and health.
- Employees must without delay inform the employer of any such faults and defects they have discovered in the working conditions which may cause hazards or risks to the employees' safety or health.

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Occupational safety and health act (no. 738/2002) (6/7)

Employees' obligations (2/2):

- Employees must use and care for the personal protective equipment which the employer has provided for them according to instructions.
- Employees must use machinery, work equipment and other devices correctly.
- Employees must follow safety instructions when using and handling dangerous substances.

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Occupational safety and health act (no. 738/2002) (7/7)

- Provisions on the structures of the workplace and the working environment:
- Workplaces must have a sufficient number of appropriate means of egress and rescue access routes, which must always be kept free.
- Employees’ exposure to chemical agents must be reduced to such a level that no hazard or risk from these agents is caused to the employees’ safety or health or reproductive health.
- Workplaces must be provided with the necessary alarm, fire safety, life saving and rescue systems and equipment.
- The employer must take care of the arranging of the employees' first aid.
- The employees must be given the instructions for getting first aid and follow-up care in the case of an accident.

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Conclusions on the OSH act (1/2)

- In teaching situations, the teacher corresponds to the employer, and the student to the employee.
  - **After orientation, employees are (partly) responsible for their own safety!**
- All students are covered by an accident insurance.
  - However, if a student on purpose breaks the rules, it is possible that the compensations are restricted.
  - Read more: https://guide.student.helsinki.fi/en/article/accident-insurance-students-and-pupils

- Note: Find out what is the insurance policy of you own learning institution.

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Conclusions on the OSH act (2/2)

- Students have the obligation to study thoroughly at a given time the laboratory work to be done.
- Students have the obligation to work safely and use appropriate personal protective equipment
  - **The bare minimum: laboratory coat and safety goggles** at the Department of Chemistry.
- You can and you should ask for help if you don’t know what to do!
  - Material Safety Data Sheet (MSDS or SDS) is a very important source of information. In principle, every substances’ hazard and risk information is found in SDS.

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Things to consider (1/2)

- The amount and especially quality of the necessary safety orientation can vary according to the employees' educational background.
- The orientation of employees to the hazard properties of chemicals takes place naturally with the help of SDSs.
  - If someone's background in chemistry is weak, this can be the only choice.
- A chemist that holds a university degree may know enough about the chemicals they intend to use without the need to specific orientation. At the very least, a chemist can clarify the necessary information from suitable sources.
  - In fact, a chemist must also be able to draw up an SDS!

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Things to consider (2/2)

- Therefore, chemistry students must learn the fact that all information does not need to be always looked at separately
  - Credibility as a chemists!
- The orientation of students to the hazards of chemicals takes place in different ways designed by teachers.
  - One of the objectives of laboratory work during bachelor studies is to learn to know the properties of common chemicals and how to use them safely.
  - The student should understand the purpose of different stages of the work, chemical reactions taking place in the work, proper working methods, and how to be careful, precise, and tidy.

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Congratulations for completing the Module 1

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