



6 Teacher's notes – Volume 6 Green procurement and hazardous materials

The first part of Volume 6, Textbook 6A "Green procurement" informs about the potentials offered by green procurement, its strengths and weaknesses as well as associated topics such as the life cycle of products. It provides an introduction to eco-labels, product evaluation and the assessment of suppliers. It illustrates step by step how to implement green procurement in a company, which aspects have to be considered and which barriers to overcome.

The second part, Textbook 6B "Hazardous materials", is dedicated to the topic of hazardous materials which is closely connected to green procurement. Different types of hazardous materials as well as the symbols and identification letters on the product packaging are presented. Furthermore safety data sheets and the proper storage of hazardous materials are discussed in great detail.

The third part, Textbook 6C, is dedicated to sustainable chemicals management (SCM). It focuses on the assessment of risks arising from chemicals and the adequate measures to reduce them. Different types of substance-related risk reduction measures (RRM), technical RRM, organizational RRM and personal protection measures are presented. In addition, the textbook provides an introduction to basic principles, exposure methods and the advantages and objectives of non-regulatory industry initiatives in the field of SCM. The innovative business model Chemical Leasing is presented and examples of international SCM programmes are given.

The teacher's notes provide comments on all **training units (workshops)**.

The background material can be used as described below.

Use of the background material "Green procurement and hazardous materials"	
Material	Comment
Textbook	The textbook provides background information on the three topics. The trainer should be familiar with the theory of green procurement and the other topics covered in the workshop. He must also be informed about the legal situation regarding hazardous materials in his country in order to underline the necessities of proper handling and storage of these substances. The third part should be used by the trainer to communicate the importance of sustainability in the context of chemicals management. The textbook itself can be distributed as training material to the participants.
Examples	The examples of Volume 6 have been taken from practical experiences of European enterprises. They illustrate the positive results of green procurement and sustainable chemicals management: <ul style="list-style-type: none"> - Green procurement in public institutions; - Handling and storage of hazardous materials; - Working instructions for the proper handling of hazardous materials; - Eliminating methylene chloride from bitumen binder testing; - Metal degreasing – from solvents to demineralized water; - Reducing risks from glue vapours; - Reduction of VOC emissions by using fatty acid esters for metal cleaning processes; - Optimization of the cleaning process of metal parts; - Reduction of coating powder consumption.



Exercises

Four exercises support the practical application of the new topic for the participants. The exercises are mostly designed for group work but can also be used as individual exercises.

- **SWOT analysis of green procurement:** This exercise is an activity to be performed simultaneously by two groups. It should be carried out at an early stage of the workshop, when participants already have an idea of green procurement but have not heard too much about it yet.
- **Product evaluation:** This exercise should be carried out when the participants are already familiar with eco-labelling and product assessment. The point of this exercise is to show the difficulties in assessing products as many different parameters have to be considered. There is no ideal solution, but the participants learn to argue their decision for the better product (two T-shirts, two paints and two insulation materials).
- **Interpreting safety data sheets:** In this exercise each group is responsible for purchasing and has to decide if a new product should be ordered. The decision has to be based on the safety data sheet (SDS) of the product. The participants have to collect information on the following:
 - Type of material;
 - Hazards and toxicological information;
 - Protective equipment;
 - Handling and storage;
 - Accidental release measures/first aid.

For the presentation by the groups, arguments in favour or against a purchase have to be prepared taking into account the characteristics listed above.

- **Finding risk reduction measures:** The aim of this exercise is to understand how to improve process safety by means of risk reduction measures. It focuses on how to analyse a working process and find critical activities and substances at the workplace which could harm human health and the environment. For these critical activities and substances the risk reduction measures have to be determined.

Slides

The slides are divided into three presentations. The first part focuses on green procurement, its benefits and the advantages of reliable green labelling. Short information on the importance of considering the whole life-cycle of a product has been included in the different evaluation models.

The second part is dedicated to the different danger symbols and classifications. It also provides information on the proper handling and storage of hazardous products.

The third part of the presentation contains slides on the key issues of chemicals management and chemicals risk assessment.

Worksheets

The five worksheets are designed to support the practical work in the assisted companies. The first two worksheets facilitate the ecological evaluation of products and suppliers and include a list of criteria to be followed. The part hazardous materials is covered by two worksheets which illustrate how to build up a register of hazardous materials in a company, evaluate the risk potential and define necessary measures in case of an emergency involving these substances (following the traffic light scheme). The last worksheet can be used to document the risk assessments carried out.

The worksheets include:

- *Environmental evaluation of the most important products and services (Worksheet 6-1);*
- *Evaluation of suppliers (Worksheet 6-2);*
- *Register of hazardous materials (Worksheet 6-3);*
- *Evaluation of risk potential, definition of measures (Worksheet 6-4);*
- *Risk assessment sheet (Worksheet 6-5).*

The worksheets can also be opened as [doc.files](#).



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Checklists

The checklists serve as an overview of the points to consider when implementing green procurement practices, handling hazardous materials or selecting risk management measures. In this way the main topics of Volume 6 are entirely covered.

Questions

The questions check the participants' understanding of the information covered during the training course or workshop. Most of the information is included in the textbook, therefore links to the textbook are provided. The trainer can decide if and how he checks the participants' knowledge and if he wishes to use these questions.

In addition, the questions can be used as a quick self-check for the trainer.



Training course/workshop

The participants of a workshop or training course on “Green procurement and hazardous materials” are consultants or trainers.

The following table shows an example schedule of a two-day workshop which is designed as part of a series of workshops. This schedule has proved to be efficient with different target groups.

The second table comprises the suggested materials, learning objectives and success indicators for the different teaching units.

Example schedule for a training course/workshop “Green procurement and hazardous waste”				
First day				
Topic	Content	Time	Min.	Method
Welcome		9.00	15	
	Welcome of participants Programme of the day, organizational matters		5 10	All All, flip-chart
Introduction to green procurement		9.15	85	
	Why green procurement? Starting right at the source; decision, which materials enter the company (link to hazardous or toxic materials); presenting positive examples from practical experience.			Trainer: presentation with slides (video beamer)
Coffee break		10.40	20	
Exercise SWOT analysis		11.00	45	
	SWOT analysis of green procurement (Exercise 1)		45	Group work on pinboard using pin cards/presentation
Environmentally friendly materials		11.45	45	
	Difference between absolute and relative environmental friendliness; evaluation methods; life cycle: 5 phases; green labelling: presentation and assessment of different labels; site certifications.		45	Presentation by the trainer. Involve participants, e.g. by letting them guess in which phase of the life cycle a car is most damaging to the environment.
Lunch		12.30	75	
Group work: Evaluating products		13.45	45	
	Assessing two different products for the same purpose (T-shirts, paints and insulation material); presentation of the results (Exercise 2)			Form three groups, distribute handouts for the evaluation
Green procurement		14.30	20	
	Summary, how to evaluate suppliers, how to include green procurement in the company (example for ecological guidelines)			Presentation by trainer and questions on experience of participants
Break		14.50	30	
Introduction: Hazardous materials		15.20	30	
	Different types of hazardous materials, labelling of materials: danger symbols, identifications, classifications; safety data sheets			Presentation, interrupted by questions to the participants



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Exercise: Safety data sheets		15.50	40	
	3 groups assess safety data sheets and have to prepare a presentation (Exercise 3)			Explanation of group work: slides. Presentation of the group work: flipchart
Storage of chemicals		16.30	20	
	Proper storage of chemicals, examples			Presentation by trainer
Continuation		16.50	10	
	Summary, continuation of the work, worksheets, homework			Trainer/flipchart
End of first day		17.00		

Second day

Topic	Content	Time	Min.	Method
Welcome		9.30	15	
	Welcome of participants Programme of the day, organizational matters		5 10	All All, flip-chart
Chemical risk assessment		9.45	85	
	How can chemical hazards and the associated risks be identified, and how can the risks arising from hazardous substances be assessed? Where can the necessary information be found?		85	Presentation, interrupted by questions to the participants, Internet demonstration
Coffee break		11.10	20	
Exercise: Selection of RRM		11.30	60	
	Different types of risk reduction measures. Exercise on the selection of risk reduction measures (Exercise 4)		60	Presentation by trainer, questions on experience of participants, group work
Lunch		12.30	75	
Communication in the supply chain		13.45	45	
	Different means of communication in the chemical supply chain and why they are important. What are the advantages of each form of communication?			Presentation by trainer and questions on experience of participants
Exposure monitoring		14.30	30	
	Which national exposure limits are relevant? How to develop and carry out an exposure monitoring programme.			Presentation by trainer and questions on experience of participants
Coffee break		15.00	25	
Non-regulatory initiatives, Chemical Leasing		15.25	45	
	Advantages of voluntary industry initiatives on sustainable chemicals management, Responsible Care initiative, Chemical Leasing as a means of sustainable chemicals management		45	Presentation, experience of participants
International programmes		16.10	40	
	Impact of European chemicals legislation REACH on companies exporting to the EU; concept of SAICM, Green Chemistry Programme of US EPA		40	Presentation, interrupted by questions to the participants
Continuation		16.50	10	
	Summary, continuation of the work, worksheets, homework			Trainer/flipchart
End of second day		17.00		



Explanation of the topics of the training course	
Topic	Materials/learning objectives/success indicators
Introduction to green procurement	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Slides stressing the importance of green procurement; - Textbook of this volume. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Show the participants the connection between green procurement and cleaner production (you start at the very source of the problem!); - The procurement department decides upon which material enters a company; - Show the cost saving potential of green procurement (together with machines this amounts to 50% of the operating costs of a company); - Show some positive company examples. <p><i>Success indicators:</i></p> <ul style="list-style-type: none"> - The participants get to know the background of green procurement and understand the importance of using environmentally friendly materials; - They can quote savings companies have made due to a switch to environmentally friendlier products.
Group work participants	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Pinboard, pinboard cards, Exercise 1; <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Participants form groups and discuss strengths, weaknesses, opportunities and threats of green procurement; - The well known cons of green procurement are stated (green products are more expensive, they look less stylish, technology cannot cope with the new bio-products, etc.). The pros are summarized as well – awareness and creativity for green products. <p><i>Success indicators:</i></p> <ul style="list-style-type: none"> - The participants get good arguments for the advantages of green procurement; - They learn to see both sides of the medal.
Environmentally friendly materials	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Textbook, slides of this volume; - Own examples. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - The participants get a deeper understanding of the topic. They learn how to evaluate environmental friendliness using different criteria and taking into account the whole life-cycle of a product (supply examples). Presentation of different evaluation methods and eco-labels. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - The participants learn to apply life cycle thinking and understand this integrated approach; - The participants can compare between more or less demanding eco-labels.
Exercise: Evaluating products	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Exercise 2. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Find out on what information to rely when carrying out a product evaluation. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - The participants know what sources to consider and which information is valuable for the evaluation.
Green procurement	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - See background material slides, textbook and Worksheet 6-2. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Summarize and foster the knowledge on green procurement; help companies with the supplier evaluation; make clear that companies can put pressure on the suppliers. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Green procurement is established as an important CP topic.



Explanation of the topics of the training course	
Topic	Materials/learning objectives/success indicators
Hazardous materials	<p><i>Materials:</i></p> <ul style="list-style-type: none">- Textbook, slides and background material. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none">- Learning to read the different danger symbols (danger of fire and explosion, danger to health and the environment), learn to read a safety data sheet. <p><i>Success indicator:</i></p> <ul style="list-style-type: none">- The participants learn where to find information on hazardous materials (packaging, safety data sheets, etc.)
Exercise: Safety data sheet (SDS)	<p><i>Materials:</i></p> <ul style="list-style-type: none">- See background material textbook, Exercise 3 and Worksheet 6-4 <p><i>Learning objectives:</i></p> <ul style="list-style-type: none">- Learn how to read and what to concentrate on in an SDS;- Make the SDS the basis for a purchase decision. <p><i>Success indicator:</i></p> <ul style="list-style-type: none">- The participants use SDS in their company work.
Storage of chemicals	<p><i>Materials:</i></p> <ul style="list-style-type: none">- See background material slides, examples. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none">- Learn which chemicals can be stored together by using pictograms. <p><i>Success indicator:</i></p> <ul style="list-style-type: none">- The participants are motivated to ensure proper storage.
Chemical risk assessment	<p><i>Materials:</i></p> <ul style="list-style-type: none">- See background material textbook, slides, links and Worksheet 6-5 <p><i>Learning objectives:</i></p> <ul style="list-style-type: none">- Learn where to obtain information about chemical properties;- Understand the procedure of risk assessment regarding chemical hazards. <p><i>Success indicator:</i></p> <ul style="list-style-type: none">- The participants start assessing the risks arising from chemicals used in companies.
Exercise: Selection of risk reduction measures	<p><i>Materials:</i></p> <ul style="list-style-type: none">- See background material textbook, slides, examples, checklist, Exercise 4. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none">- Get to know different types of risk reduction measures;- Learn how to identify the adequate combination of RRM. <p><i>Success indicator:</i></p> <ul style="list-style-type: none">- The selected risk reduction measures applied in companies are optimized.
Communication in the chemical supply chain	<p><i>Materials:</i></p> <ul style="list-style-type: none">- See background material textbook, checklist. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none">- Understand the importance of communication for sustainable chemicals management;- Get to know different ways of transmitting chemical safety information; <p><i>Success indicator:</i></p> <ul style="list-style-type: none">- The participants improve the communication of chemical risks with the employees, suppliers and customers of the assisted companies.



Explanation of the topics of the training course	
Topic	Materials/learning objectives/success indicators
Exposure monitoring	<p><i>Materials:</i></p> <ul style="list-style-type: none">- See background material textbook, slides. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none">- Understand the relevance of exposure limits;- Get an insight into the setup of an exposure monitoring programme. <p><i>Success indicator:</i></p> <ul style="list-style-type: none">- The participants are motivated to start an exposure monitoring programme in the assisted companies.
Non-regulatory initiatives, Chemical Leasing	<p><i>Materials:</i></p> <ul style="list-style-type: none">- See background material textbook, examples, slides. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none">- Find out the advantages of implementing a sustainable chemicals management system and/or joining a voluntary industry initiative;- Understand the concept and functioning of Chemical Leasing. <p><i>Success indicators:</i></p> <ul style="list-style-type: none">- The assisted companies join a voluntary industry initiative on sustainable chemicals management;- The participants examine possibilities of implementing the Chemical Leasing business model in the assisted companies.
International programmes	<p><i>Materials:</i></p> <ul style="list-style-type: none">- See background material textbook. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none">- Get to know international programmes promoting sustainable chemicals management;- Identify funding opportunities for sustainable chemicals management projects. <p><i>Success indicator:</i></p> <ul style="list-style-type: none">- Become aware of the global dimension of sustainable chemicals management and examine possibilities for the involvement of the assisted companies.