

## **M9-EN.4 CHEMICAL HAZARDS**

M9-EN.4.1. Harmful chemical substances

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### **Short description of the chapter (M9.4.jpg)**

This chapter covers and analyses **chemical risk factors** that employees using various chemical substances and preparations in their work are exposed to (see: M9-EN.1.2, M9-EN.1.3 work description in hotels and restaurants):

Goals of this chapter:

- Explain the definition of hazardous chemical substances
- Analyse the impact of chemical substances on human health
- Present safety measures preventing or minimizing the negative effect on human health.

Information presented in this chapter will help the managers to determine chemical risk factors in hotel and restaurant sector, to assess each particular situation and take appropriate preventive measures to prevent or minimize the risk.

### **M9-EN.4.1. Harmful chemical substances**

**Harmful chemical substances** are substances get into human organism through:

- airways
- digestion system
- skin

and have a negative impact on human health.

Harmful chemical substances can be in the form of:

- liquids
- gas

- vapour
- aerosols
- tobacco smoke.

Taking into consideration type of activities in hotels and restaurants and tools and equipment used (see: M9-EN.1.2, M9-EN.1.3), we may see that **kitchen assistants, maids and cleaning staff** are most often exposed to chemical risk when they use:

- different cleaning substances (for floor, walls, windows, furniture)
- disinfecting substances
- odour improvers
- bleachers
- laundry detergents.

Restaurant **kitchen staff** is exposed to hazardous substances in the cooking process:

- vapour of boiling food
- boiling oil vapour
- carbon dioxide (dispensers of drinks)

Restaurant **waiting staff** is exposed to:

- cigarette smoke

The following should be considered and implemented during the assessment of chemical risk:

- chemical substances and preparations used by employees
- harmful substances generated during the working process
- all substances used should be registered in the list.

Based on the list the following should be determined (the employer shall use material safety data sheets submitted by manufacturers or suppliers of chemical substances and preparations):

- characteristics of substances and compounds
- composite substances
- substance classification and marking specifying the basis of the assessment. Are impacts such as 'acute toxicity', 'skin irritation' 'mucous irritation' and 'mutagenic potential' assessed?

- Purpose and method of using
- Type of risk/impact taking into consideration contact with skin and spreading through air
- Specific protective equipment: substitutes, technical and organizational measures.

Based on the above information chemical substances should be inspected and implementation of safety measures should be controlled.

#### **M9-EN.4.2. Impact to harmful chemical substances on human health**

The **impact** of hazardous chemical substances depends on:

- concentration
- toxicity
- way of getting into the human body.

According to the speed of effect harmful chemical substances are divided into:

- Harmful chemical substances of **acute effect**
- Harmful chemical substances of **chronic effect**.

Chemical substances have different effect on human body depending on immune system and sensitivity to various allergens.

The most common effects are respiratory system problems and skin allergies (**##G18##**):

- Acute rhinitis
- Cough
- Breathlessness, bronchus spasms
- Running eyes
- Sore eyes, eye redness
- Skin dryness, chapping, soreness and/or redness
- Various rashes.

If one of the above symptoms occurs, contact with harmful substance shall be immediately discontinued (e.g.: hand washing, eye rinsing, leaving and airing the premises where the chemical substance is used)

Symptoms may occur not immediately after using the substance but a few hours later. Therefore the relation with the work performed using a chemical substance cannot be

directly determined. If allergic reaction eases or disappears during the weekend and renews during working time it means that allergic symptoms is the effect of chemical substances used in the process of work.

Toxicity of chemical substance is characterized by the so-called risk phrases.

The type of risk phrase is specified by the letter 'R' and a digital code showing the toxicity of a hazardous substance. If the substance causes confounding effect, the risk phrase consists of several groups of digits (e.g. R28/27/48).

**By toxicity hazardous substances are classified as follows**

<b>The degree of toxicity of the chemical substance or preparation</b>	<b>Symbol of danger</b>	<b>Indication of danger</b>	<b>Risk phrases</b>	<b>Short description</b>
Very toxic substances and preparations	T+	Very toxic	R28 R27 R26 R39	<ul style="list-style-type: none"> <li>– Very toxic if swallowed</li> <li>– Very toxic in contact with skin</li> <li>– Very toxic if inhaled</li> <li>– Hazardous: causes very severe irreversible harm</li> </ul>
Toxic substances and preparations	T	Toxic	R25 R24 R23 R39  R48	<ul style="list-style-type: none"> <li>– Toxic if swallowed</li> <li>– Very Toxic: danger of very serious irreversible effects in contact with skin and if swallowed</li> <li>– Danger of serious damage to health by prolonged exposure</li> </ul>
Harmful substances and preparations	Xn	Harmful	R22 R21 R20 R65  R40  R48	<ul style="list-style-type: none"> <li>– Harmful if swallowed</li> <li>– Harmful in contact with skin</li> <li>– Harmful if inhaled</li> <li>– Harmful: may cause lung damage if swallowed.</li> <li>– Danger of serious damage to health by prolonged exposure</li> </ul>
Depleting (corrosive) Substances and preparations	C	Depleting (corrosive)	R35 R34	<ul style="list-style-type: none"> <li>– Severe burns</li> <li>– Burns</li> </ul>
Irritating	Xi	Irritating	R38	<ul style="list-style-type: none"> <li>– Irritates skin</li> </ul>

substances and preparations			R36 R41 R37	– Irritates eyes – Can severely affect the eyes – Irritates airways
Sensitizing substances and preparations	Xn	Harmful	R42 R43	– May cause allergy if inhaled – May cause allergy if in contact with the skin
Carcinogen substances and preparations	T Xn	Toxic Harmful	R45 R49 R40	– May cause cancer – May cause cancer if inhaled – Possible risk of irreversible effect
Mutagenic substances and preparations	T Xn	Toxic Harmful	R46 R40	– May cause heritable genetic damage – May cause irreversible health disorders
Toxic to reproduction substances and preparations	T Xn	Toxic Harmful	R60 R61 R62 R63	– May impair fertility – May cause harm to the unborn child – Possible risk of harm to the unborn child

### M9-EN.4.3. Safety measures in working with chemical substances

Employees (cleaners, chambermaids, auxiliary kitchen workers) who use chemical substances for work must know about their hazard, type of risk and mandatory safety measures. Usually all this information is presented in the safety data sheet **##G11##** (**##D14##**) and on package labels. (M9.4.3.jpg)

To avoid risk related to chemical substances, it is advisable to follow the rules below:



**READ THE INSTRUCTION ON THE LABEL AND FOLLOW INSTRUCTIONS OF USE**



**FIND OUT WHERE YOU CAN GET INFORMATION ON SAFE USE OF CHEMICAL SUBSTANCES AND WEAR PROTECTIVE CLOTHING**



**ASSURE THAT YOU KNOW HOW TO PROVIDE FIRST AID IF ACCIDENTALLY CHEMICAL PRODUCTS GET INTO THE AIRWAYS, MUCOUS MEMBRANE OR SKIN**



**NEVER POUR CHEMICAL SUBSTANCES INTO CONTAINERS DESIGNATED FOR OTHER PURPOSES, E.G. BOTTLES FOR DRINKS**



**NEVER STORE CHEMICAL SUBSTANCES IN UNLABELLED CONTAINERS**



**DO NOT MIX CHEMICAL SUBSTANCES. IT CAN BE VERY DANGEROUS**



**INFORM THE AUTHORITIES ABOUT ANY BREAKDOWN OF THE EQUIPMENT, SPILLAGE OF CHEMICAL PRODUCTS OR DAMAGED CONTAINER**



**ALWAYS FOLLOW THE RULES. LEARN TO WORK SAFELY IN THE WORKPLACE**



**HAVING NOTICED ANY FAULT, ALWAYS INFORM THE MANAGER**



**USE ONLY THE PRODUCTS ASSESSED AND CERTIFIED BY THE CONTROL OF HARMFUL SUBSTANCES**

If any chemical substance allergy is diagnosed or a person is allergic, the employee should avoid contact with allergen. If that is impossible the following should be implemented:

- Use of personal protective equipment
- Control the duration of work with allergens to minimize the effect of chemical substance

To avoid and prevent the negative effect of chemical substances the following should be implemented:

- Proper ventilation
- Mechanical ventilation in all premises where smoke and oily vapours are generated (above grills, stoves, pans); draughts shall be prevented
- Regular maintenance of ventilations screens and filters to ensure efficient operation of mechanical ventilation equipment
- Oil should be heated only when necessary, not constantly
- Oils should be replaced and checked frequently
- Emergency alarm system should be installed and regularly maintained in cellars or warehouses where containers with carbonic acid are stored

#### **M9-EN.4.4. Marking of harmful substances**

##### **M9.4.4.jpg**

Employees working with any chemical substances or preparations shall be aware not only of warning signs but also of toxicity symbols used on the labels of chemical substance packaging:

**Xi ( IRRITANT)** - Irritant chemical substances irritating skin, eyes and airways, such as detergents, fertilizers.

**Xn (HARMFUL)** – Substances harmful by inhalation, in contact with skin and if swallowed, such as cleansers, paint. Such substances should be handled with gloves and respiration protective equipment.

**C (CORROSIVE)** – Corrosive substances, such as sewage cleaning detergents, powder for dishwashers, heavy cleaning detergents should be handled with gloves and direct contact must be avoided.

**F (HIGHLY FLAMMABLE)** – Products in a aerosol containers are highly flammable and must not be kept close to open fire or heating equipment.

**F+ (EXTREMELY FLAMMABLE)** –Extremely flammable substances must be protected from direct sunshine, higher than 50°C temperature. It is forbidden to spray them into open fire or hot surfaces. They must be kept away from sources of fire.

**T (TOXIC)** – Substances carrying this marking are very harmful by inhalation, in contact with skin and if swallowed.

**T+ (VERY TOXIC)** – Substances and preparations carrying this marking expose to danger of very serious irreversible effects. They are classified as carcinogenic, dangerous for reproductions or causing heritable genetic damage.

**O (OXIDISING)** – Explosive with or without contact with air.

**IRRITANT**



DIRGINANTI

**EXTREMELY  
FLAMABLE**



YPAČ DEGI

**HARMFUL**



KENKSMIRGA

**TOXIC**



TOKSISKA

**CORROSIVE**



ARDANTI (ĖSDINANTI)

**VERY TOXIC**



LABAI TOKSISKA

**HIGHLY  
FLAMABLE**



LABAI DEGI

**OXIDISING**



OKSIDUOJANTI

## **M9-EN.4.5. Environmental tobacco smoke in the workplace, effect on human health and safety measures**

This section deals with environmental tobacco smoke or second-hand smoke.  
**M9.4.5.jpg**

**Administrators, barmen, waiters and busboys** working in bars, restaurants, cafes and other service places spend a lot of time in places polluted with tobacco smoke. The risk of harm depends on the concentration of smoke and time spent in smoky environment. Test results proved that passive smoking has the same effect as 0.1-2 cigarettes smoked.

Long-term passive smoking can be the cause of more severe diseases. Children are especially sensitive to the effect of various poisons.

Breathing of smoke-filled air:

- Accelerates fatigue
- Worsens health state
- Reduces work efficiency
- Irritates the mucous membrane of eyes and airways of sensitive or ill persons, may cause migraine, bronchitis, asthma, angina pectoris attacks
- Flares up allergic diseases

The aforementioned factors increase the potential of accidents in the workplace.

It was scientifically proved that no ventilation can eliminate harmful compounds formed from a burning cigarette. Therefore, **mechanical ventilation** systems in bars, cafes, restaurants and other premises where customers are served is only an **auxiliary measure** protecting employees from the harmful effect of tobacco smoke exposure.

**The only way to protect employees and clients from hazardous effect of tobacco smoke is banning of smoking in bars and restaurants.**

Several countries have already solved the problem implementing a very progressive measure recommended by World Health Organisation and banned smoking in bars, restaurants and other premises designated for serving customers. The ban came into effect in Ireland, Italy, Malta, Norway, Sweden and several states of the USA. Public opinion polls were carried out in the countries planning to introduce the ban for smoking. 47% of Norwegians supported the ban (a year later the percentage of supporters reached 58%), 59% in Ireland, in Sweden 85% supported banning of smoking in restaurants and 77% supported banning of smoking in bars and clubs.

The research showed that the positive effect of the smoking ban was felt rather soon. After three months of the ban in New York the amount of cotinine, the main metabolite of nicotine in plasma, in the blood of employees working in bars, restaurants and cafes, which is the main metabolite of nicotine in plasma, reduced by

85%. Out of 74% of employees complaining of respiratory disorders, the symptoms disappeared in 59% of the employees after smoking was banned in their workplace. It not just protected the non-smokers from passive smoking, but reduced the spread of smoking and the quantity of cigarettes smoked per day among the smokers. In Italy every tenth smoker quit smoking within the five initial months, 6.6% smoked less.

The negative economic effect caused by the ban of smoking in restaurants, cafes and bars is often feared but the research show that the ban had no effect or a positive effect on the volume of sales in cafes, restaurants and bars after implementation of the smoking ban. In New York the money spent in bards increased by 8.7% during the first year compared to the previous year, the number of employees in this sector increased. In Ireland the volume of sales reduced by 4.4 % during the first year of the ban (2004), but that drop resulted not from the smoking ban: sales dropped as a result of rising prices since 2001, changing lifestyle, demographic factors. In Norway the number of customers of cafes, restaurants and bars remained the same.

##W15##

**M9-EN.4.6. Self-assessment test**

Based on the above information list chemical risk factors that employees working in hotel and restaurant sector are exposed to.

Try to name safety measures to prevent these hazards.

Fill in the form below using the template. You can check your knowledge: ##D4##.

Chemical risk factors		Employee	Harm	Essential safety measures
Activity/source	Hazard description			