

## Laboratory Safety Instruction

This laboratory safety instruction provides principal rules for working with hazardous materials. Additionally to it, the special operating instructions\*) for very toxic, toxic, carcinogenic, embryotoxic, gene-modifying, high and easy-inflammable materials as well as for dangerous works in the sense of the "guidelines for safety and health protection in laboratories" ("Regeln für Sicherheit und Gesundheitsschutz für Laboratorien", GUV 16.17) have to be observed.

All activities within the laboratory have to be carried out in a manner consistent with the safety rules that are provided in this laboratory safety instruction and in the special operating instructions\*) for hazardous materials.

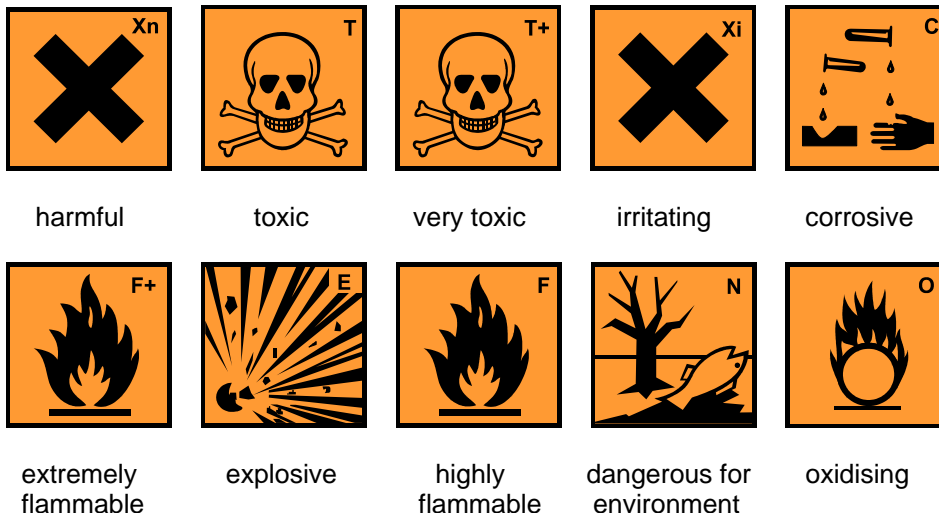
This laboratory safety instruction is completed by the " rules for security and health protection for laboratories " (GUV 16,17), edition October 1993, updates 1998 (in former times " guidelines for laboratories "). Each personnel should know the content of the GUV 16.17.

Even materials of unspecified harmfulness must be treated with the same precautions taken with harmful materials.

If the regulations provided in this laboratory safety instruction cannot be realised because of poor equipment, please contact your superior.

### 1. Hazardous materials

Hazardous chemicals are gaseous, liquid, solid or dustlike materials that have to be attached to the following risk-symbols



or that have to be classified as " inflammatory " (without symbol), carcinogenic (death's head symbol), reproduction-endangering (death's head symbol), fruit-damaging (death's head symbol), mutagenic (death's head symbol) or sensitising (St. Andrews cross) or that in any other way cause chronic disease or that can form hazardous reaction products or set them free.

The accommodation of these materials usually effects through the respiratory tract, the skin, the mucous membranes and the digestive tract.

\*) The German equivalent is "Betriebsanweisungen"

## 2. Enquiry

Before starting work with hazardous materials the employees have to inform themselves about the characteristics of the material. The information can be drawn from the material safety data sheets, packing labels, manufacturer or dealer catalogues as well as from the special dangers (R-records) and security advises (S-records) (For R- and S-records see Appendix).

The employees have to check, whether it is possible to replace the hazardous material by a less harmful substance.

The employees have to create a special operating instruction for the applied hazardous materials with respect to the special working conditions within the laboratory.

For all hazardous chemicals that are used in the laboratory or stored in the stockrooms a list has to be kept accessible which is currently actualised by the employees which contents the name, warning category, the (maximum) storage quantity as well as the application area of the hazardous materials.

The safety data sheets for hazardous materials - usually provided by the producer - shall be collected and kept accessible (see Appendix).

## 3. Preventive procedures and behaviour rules

Dangerous works (viz. GUV 16,17, paragraph 5) shall not be done alone. At least one further person must be present during work, even if the work takes place before or after the normal working hours.

If an obvious lack of safety-relevant laboratory equipment occurs the superior has to be informed immediately.

Any defective equipment which may result in any danger to the life and health of employees has to be taken out of operation.

If experiments are performed which require a permanent supervision the workstation may be left only if another qualified worker continues supervising.

The personnel must ensure that after working hours the working places are secured, e.g. turning equipment off, closing all gas/water cocks, if possible, switching off the master gas- and electricity-supply, closing all doors and windows.

All employees must watch out for cleanliness in the laboratory.

Any meal, drinking and smoking in the laboratory are forbidden. This precaution is made to prevent inadvertent accommodation of hazardous materials through contaminated food or decomposition products which develop in the cigarette glow.

Work with gaseous, dustlike, easy volatile or with inflammable or self-igniting materials must be done only in fume cupboards with fans. The front sliding panel of the fume cupboard is to be kept closed during operation.

Warning cupboards from which gases, steams or nebulas in dangerous concentration or quantity can escape have to be attached to a permanent ventilating system.

The function of the ventilating system has to be checked (e.g. by a wind wheel). Defective deductions have to be taken out of operation and repaired by a competent person \*\*\*\* mechanic/ department \*\*\*\*.

Mechanical devices must be used for pipetting. Pipetting by mouth is prohibited.

Glass vessels may not be carried next to neck or face. For carrying please use special boxes, buckets with handle or similar containers.

Gas burners and other equipment that work with gaseous fuel shall be used only if the hoses they are attached with, are DVGW-certified (label on hoses or hose connector).

Precaution for liquid gas bottles (propane, butane):

Within the laboratory the stock of liquid gas bottles should be restricted to a maximum of 1 bottle with a filling weight of max. 14 kg, back-up bottles in the laboratory are forbidden. In basement rooms it is not allowed to use liquid gas cylinders nor any device that works with liquid gas.

#### 4. Labelling and storing of hazardous materials

Do not store hazardous materials in containers which can be changed with food bags or bottles. The containers must be marked with the designation of the material or the constituents of the preparation, the hazard symbol and the r- and s-records.

This applies even for those containers in which hazardous materials are stored temporarily or only for daily use.

Materials which can form dangerous reaction products may not be stored together. The contact among themselves can be prevented e.g. by setting them into separate catch pans.

Very toxic and toxic materials are to be kept under lock and key and may only be handled by employees which are specially trained for handling these substances.

The storage of flammable liquids as well as high or easy-inflammable materials in refrigerators is permitted only if the used refrigerators are explosion-proof (viz. GUV 16.17, point 3.8).

The quantity of flammable liquids in the laboratory has to be restricted to the daily requirement. Higher amounts have to be kept in safety cupboards which are consistent with TRbF 22 and DIN 12925 T1 or stored at suitable storage places.

If the daily requirement of flammable liquids is increased they have to be stored at a determined place or in safety cupboards which are consistent with TRbF 22 and DIN 12925 T1.

For hand use flammable liquids should be stored in containers with a capacity of no more than 1-l.

If the daily requirement of flammable liquids is increased it is allowed to use glass containers up to a capacity of 2,5 -l, metal containers up to a capacity of 10-l or plastic containers up to a capacity of 5-l.

The stock of gas cartridges and sprays with propellant from propane/ butane has to be limited to the daily requirement. Larger quantities have to be stored in safety cabinets for gas cylinders or for flammable liquids.

The GUV 16.17, point 4.10 provides detailed regulations about the storage of hazardous materials in laboratories which have to be observed.

Hazardous materials must be stored separately considering the characteristics of the materials at the following places within the laboratory and limited to the following quantities:

Toxic / very toxic materials: .....

Inflammatory liquids:.....

Acids:.....

Corrosive solutions:.....

Fire-promoting materials (e.g. peroxides, perchlorate): .....

Explosive substances:.....

Self-inflammable materials:.....

Gas cartridges:.....

## 5. Work and protective clothing

In the laboratory only wear appropriate clothes:

- sufficiently long laboratory coat with long sleeves from cotton or Poly Cotton
- closed and firmly treating footwear

Do not wear clothes from plastic (e.g. nylon) in the laboratory, because it is easier inflammatory than cotton or Poly Cotton.

Additional use the following protective gear:

- protective glasses with side protection when you (or even other persons) start to handle hazardous materials in the laboratory;  
persons with eye-glasses have to use additional eyewear, e.g. safety goggles or face shields. (Very suitable are spectacles with corrective lenses; for the procurement and for financial support address the occupational safety office (SG Arbeitssicherheit, see Appendix)).
- protective gloves when starting work with hazardous materials which can be absorbed by skin or which are very toxic, toxic, strike-attractive, corrosive, causing allergies, carcinogen, reproduction-endangering or mutagenic.  
The gloves have to be sufficiently resistant against the used chemicals (resistance specification is provided in the catalogues of relevant manufacturers) and have to be consistent with the European Safety Standards ("CE"-label, pictogram, performance indices and customs information on packing).

At the institute/professorship / in the laboratory for handling the listed hazardous materials the following protective gloves are available:

.....

(the occupational safety office (SG Arbeitssicherheit) provides information and helps with selection of suitable protective gloves)

- Protective shoes with antistatic sole, especially if there is an increased risk that electrostatic charge unloads and effects ignition of easily inflammatory or explosive substances (especially while working with inflammatory liquids, solvents, easy-inflammatory gases or other dangerous materials). Road shoes usually do not have sufficient conductivity.

The protective clothing is provided by the institute.

## 6. Emergency and safety equipment

The employees of the laboratory have to know location and how to handle the following equipment:

- the taps of permanent installed gas mains within the laboratory and the mains tap ("Gas-Notaus") of the gas supply to the laboratory
- the master switch of the electrical supply to the laboratory
- the mains tap of the water supply to the laboratory
- the safety showers
- the eye wash
- the fire extinguisher, dousing blankets and sand extinguisher
- the First Aid box
- the chemical binder (absorption granulates, mercury bonding agent, etc..).

Manipulations to the medium supply of the laboratory shall only be done in case of emergencies. If thereby occurs an interruption of the medium supply the concerned personnel has to be informed. Note, that the sudden interruption of the medium supply can sometimes increase danger. The special operating instructions for dangerous works regulate details.

After interventions into the gas, electrician and water supply in course of an emergency address the technical office (Technischer Dienst, Tel. - 27777).

## 7. Maintenance

The function of the safety showers and eye washes has to be tested for functioning every month by *Mr. Kolacyak*.

Fire extinguishers have to be refilled after each usage. Used or empty fire extinguishers have to be delivered at the technical office (*Technischer Dienst, Tel. - 27777*).

The completeness of the First Aid box must be controlled periodically. Missing constituents or those which exceed the date of expiry must be replaced. Responsible for controlling the First Aid constituents is *Mrs. Tontsch*.

The chemical binder has to be refilled after usage.

Before the first use or after repair gas mains and cocks have to be tested for pressure tightness, if not type-certified equipment is used. Checking has to be performed by a specially instructed person (contact security manager or occupational safety office (*SG Arbeitssicherheit*)).

The function of reusable respirator masks has to be checked every year. The expiry date of the filters has to be checked. Responsible for controlling the function of the face respirators is *Mr. Rollig*.

The electricity protection (FI-safety switch, if available,) has to be tested at least every 6 months by switching on the test switch (note: electricity supply is interrupted thereby!)

## 8. Special preventive measures for handling human tissues, body fluids and other potentially infectious materials

Employees of microbiological or medical laboratories have to take place in the annual medical check-up. If there is no extra request by the secretary of the institute, ask the personnel office of this university for information. It should be in your own interest to take care that the check-up will be performed.

The surface of the working equipment has to be suitable for disinfectants. Uncoated wood and cork materials are not suitable. Instruments which have already been used and laboratory instruments from glass or sharp instruments have to be put into disinfectant before cleaning.

For the use of alcoholic disinfectants the special operating instructions have to be observed.

Any decoration, clocks and marriage rings at hands or lower arms during work with potentially infectious material are forbidden.

Further information can be drawn from the special operating instructions for working with biological agents (*Betriebsanweisungen für das Arbeiten mit biologischen Stoffen*).

## 9. Special preventive measures for handling compressed gases and deep-cold gases (viz. also " special operating instructions ")

Compressed-gas cylinders must be stored outside the laboratory because of danger of explosion during fire.

If this is not possible for technical reasons they have to be protected against fire effects, e.g. by putting them into continuous ventilating, safety cabinets, or after working hours stored in a safe place.

For very toxic, toxic and carcinogenic gases use gas cylinders that are as small as possible or "Lecture Bottles".

Those cylinders have to be put in a fume cupboard or in a safety cabinet.

If gas cylinders with flammable gases are used out of safety cabinets, the danger zone has to be observed (for details see TRG 280). Within the danger zone any working with inflammatory material as well as with other burning sources (e.g., open flames, not explosion-proof electric device) has to be avoided.

The transport of compressed-gas cylinders is allowed only with safety cap (thus without pressure reducing valve) and only if the gas cylinders are chained on a transport cart. Gas cylinders with a weight of more than 6 kg (or more than 2-l volume) may not be carried by hand.

It must be guaranteed that no person ride along or can access, when deep-cold, fluid gases (e.g. fluid nitrogen or helium) are transported in the elevator.

Gas cylinders have to be secured from falling over with chains or pipe clamps or similar material at the storage place. They must be protected against effects of direct heat treatment (i.e. minimum distance of 0,5 m to radiators and other heat sources e.g. gas chromatographs).

During the transport of very toxic, toxic or carcinogenic gases a face respirator with suitable filter must be worn (viz. special operating instructions) or be held ready in the laboratory during the completion of work. This regulation concerns the following gases:

.....(list of gases)

All components of gas cylinders and its armatures, that can come into contact with oxidising gases must be held free of oil, fat and glycerine (**attention with greasy fingers after skin care !**), because these substances increase the risk of inflammation. This particularly applies for oxygen -, nitrous gas- and compressed-air cylinders. Valves of compressed-gas cylinders filled with flammable and fire promoting (oxidizing) gases have to be opened slowly, in order to prevent valve fires or inflammation.

Replacement of manometers at pressure-reducing valves may be carried out only by following experts ..... (contact Mr. Rollig)

After termination of work the mains tap must be closed and the pressure reducing valve must be opened.

The employees must care for regular security control of gas cylinders by experts (usually carried out simultaneously with the filling up procedure). The validity period is engraved into the bottle neck. If the validity period is exceeded the superior has to be informed.

## 10. Waste reduction and - disposal

It is not allowed in any case to spill hazardous materials in the sink (sewer). Yet, if this happens, e. g., in course of an accident, immediately inform the waste water manager *Mrs. Marten-Jahns, Tel. 27593* (viz. also appendix to this instruction).

The quantity of dangerous waste should be as low as possible, i.e. by applying low amounts of hazardous substances. Residual substances, e.g. alkali metals, peroxides, hydrides, Raney Nickel, which can cause dangerous reaction products have to be transferred into less harmful products by applying appropriate methods (viz. special operating instructions).

Waste Containers have to be indicated with the designation of the materials and the danger-symbols of the materials.

When storing waste of hazardous materials within the laboratory, it has to be treated with the same safety precautions reserved for unused hazardous materials (viz. Pkt.4). For flammable liquids also limitations for the container sizes are to be observed (viz. Pkt.4).

Dangerous waste must be assigned and packed for disposal in the manner consistent with the specifications of the Referat V/5 (ZUV). The same applies also for empty gas cylinders. Sharp and fragile article have to be collected in suitable resistant and stable containers.

## 11. Behaviour in dangerous situations

In case of running out or escape of hazardous materials the regulations of the special operating instructions have to be observed. Here only unspecified behaviour rules can be provided.

Spilled materials have to be removed with suitable agents (absorption granulates, mercury bonding agent, if necessary take off with brooms and shovel) and to be deposited as special refuse; suitable extinguishing agents are to be kept close by. In case of volatile materials a good aeration has to be ensured.

After escape of flammable liquids or gases measures are to be kept to prevent ignition or explosion (viz. special operating instructions for flammable materials).

### **If dangerous gases / steams / types of dust escape or in case of fire, please notice:**

Keep calm and avoid panic reactions!

Remove injured persons from immediate danger. Thereby pay attention to own security.

Extinguish fires of cloth immediately with safety shower, dousing blanket or fire extinguisher.  
Note: persons with clothes in fire tend to panic-like reactions!

EMERGENCY CALL: Fire-brigade Tel. 09/112, if necessary point the fire-brigade to a "chemical accident ", if necessary switch fire-alarm boxes.  
The fire-brigade has to be alarmed even in case of smaller fires.

If possible interrupt the gas-supply of the room (if necessary by turning of the mains tap in the corridor). Close doors and windows, avoid draught.

Extinguish smaller fires with fire extinguisher, sand, dousing blanket; pay attention to own security.

Note: Never extinguish the following materials with water or foam extinguisher because of danger of explosion:

.....(e.g. alkali metals, metal alkyls, lithium aluminium hydride, silanes)

In the case of gas-escape and larger fires immediately leave the room and close the doors. Warn persons in other rooms, if necessary request them to leave the rooms. In case of fire do not use the elevator!

Further behaviour instructions are provided by the fire-brigade.

Immediately inform the waste water manager *Mrs. Marten-Jahns*, Tel. 27593, if hazardous material has come into the sink.

## 12. First Aid

Details about First Aid after contact with hazardous materials are provided in the special operating instructions, in the safety data sheets as well as in the "information about first assistance after effects of dangerous chemical materials" ("Informationen für die Erste Hilfe bei Einwirken gefährlicher chemischer Stoffe", GUV 20.10, August 1999).

In the case of health impairment in course of an accident with hazardous materials, in the secretary or administration an accident form has to be filled out.

**Trained First Aid manager:** Mrs. Tontsch, Mrs. Marten-Jahns, Tel. 27593

**After skin contact:** Use safety shower or rinse with a large amount of water. Bad water-soluble substances rinse with *polyethylenglycole* (e.g. of Merck, BASF or Roticlean E. Roth). In case of contact with corrosive or strike-absorptive materials address the medical service.

**After eye contact:** Immediately use eye wash, sterile eye rinsing solution or rinse eye under plentiful flowing water while spreading the lid for at least 15 minutes. Protect intact eye against splashes. While conducting first aid measures prevail some person to call the emergency service.

**After swallowing:** Immediately emergency service. If necessary submit vomit together with the package or safety data sheet of the swallowed chemical to the physician.

**After inhalation:** Take into fresh air. Give *Auxilason* or equivalent against materials which attack the respiratory tract (*Auxilason* and its equivalents need prescription; prescription is available from the occupational emergency service of the FAU). Call the medical service.

**After clothing contact:** Take off moistened clothes, clean with suitable agents or store it outside.

For further information about poisonings contact the

**poison information centre Klinikum Nuernberg-Nord**

**Tel.: (0911) 398 -2451, - 2665**

**Fax: (0911) 398 -2192**

## 13. Emergency calls:

**fire 09/112**

**accident (ambulance) 09/19222**

from each telephone within the university (except elevator phones)

An EMERGENCY CALL must be made in accordance with the following scheme:

<b>WHERE</b> has the accident occurred	location
<b>WHICH</b> kind of accident occurred	fire, corrosion, fall etc.
<b>HOW MANY</b> injured people	number
<b>WHICH</b> violations	type and part of body

**WAIT**, until the call is finished by the emergency service. Perhaps it is necessary to answer other important questions.



## 14. Other important phone numbers:

Head of the chair	- 27575
Security manager	- 27579
First Aid manager	- 27593
waste water manager	- 27593
Breakdown registration of the technical office (Störmeldestelle des Technischen Dienstes)	- 27777
Poison information centre - Klinikum Nürnberg-Nord	(0911) 398-2451, -2665; Fax (0911) 398-2192
Surgical hospital / surgical ambulance (Chirurgie, Poliklinik)	- 33260, - 33255
Ophthalmic clinic, outpatient clinic (Augenklinik, Poliklinik)	- 34464
Skin hospital, outpatient clinic (Hautklinik, Poliklinik)	- 33842
occupational health service (Betriebsärztlicher Dienst)	- 23666
occupational safety office (SG Arbeitssicherheit)	- 26631 /- 26636 / - 26291
Hasardous waste disposal (Sondermüllentsorgung, Ref. V/5)	- 22058 / - 29267

**fire alarm signal**  
**evacuation alarm signal**

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extremely intense sound of periodically varying intensity that must be followed immediately:  
Leave the building as fast as possible (e.g. via the balcony)  
Do not use the elevator.  
Come together in front of the central workshop

**fire 09/112**  
**accident (ambulance) 09/19222**

Erlangen,

.....  
Prof. Dr. P Schmuki

## Important information about accidents by spilling hazardous material into the sewer

Note: Immediately address the following persons or departments if hazardous materials are spilled in sewer:

waste water manager:.....Mrs Marten-Jahns                      Tel.: - 27593

Deputies: .....Mrs. Tontsch.....                      Tel.: - 27593

Breakdown registration of the technical office  
(Störmeldestelle des Technischen Dienstes)                      Tel.: - 27777

Stadt Erlangen - Tiefbauamt                      Tel.: 09/862 552, -346, -691

For further damage restriction:

Fire-brigade                      Tel.: 09/112

## Instruction record on dangers of handling hazardous materials and on preventive measures

Instructor Dr. H. Kaiser

On the basis of the general safety instruction (Laborordnung) of the chair and the following special operating instructions:

none

I was instructed about the dangers that may occur during work with hazardous materials within the laboratory. I was also informed about preventive measures to avoid accidents with hazardous materials. At the same time I was informed about the adequate disposal of dangerous wastes. I know, that, before the performance of experiments with hazardous material have to inform myself about the specific dangers and preventive measures for handling these materials by the material safety data sheets as well as by the literature.

The following documents were handed out to me:

Laboratory Safety Instruction (Issue 11/2000)

<b>Name</b>	<b>first name</b>	<b>date</b>	<b>signature</b>

## Instruction of women about possible dangers and working limitations during a pregnancy and during the breast-feeding time

Dear ladies,

for pregnant and breast-feeding women the legislator issued numerous regulations, in order to ensure occupational safety and protection against effects of hazardous materials on the workstation. Regulations concerning the protection of pregnant and breast-feeding women are issued in the following laws:

- the maternity protection law (MuSchG)
- the maternity protection guideline regulation (MuSchRiV)
- the X-ray regulation (RöV)
- the radiation protection regulation (StrSchV).

These regulations are intended for the employer, in this case the university and the clinic. So, to ensure your own protection and that of your child, indicate your pregnancy and the prospective delivery date (viz. § 5 MuSchG) as soon as possible to your superior and to the department for personnel matters (Personalabteilung) of the FAU. The message will be kept confidentially!

The university / clinic is instructed to inform the Gewerbeaufsichtsamt Nürnberg about the name of the pregnant women, the delivery date, the working time and the occupational activities (§ 5 Abs.1 and § 19 MuSchG). The information is transmitted by the Personalabteilung of the university and the clinic.

The respective university or clinic department (hospital, institute, chair etc.) must arrange the workstation of a pregnant or breast-feeding women in such a way that life and health of woman and child are not endangered by the occupational activities (viz. § 2 MuSchG). Therefore, after the indication of a pregnancy, the working conditions of the pregnant women have to be immediately evaluated by the superior in order to elucidate occupational risks. This evaluation must include all occupational activities of the pregnant or breast-feeding woman (§ 1 MuSchRiV).

If the workstation evaluation results in the fact that security or health is endangered, the employees has to arrange suitable protective- and safety measures. Those are e.g. rearrangement of the working place, occupation limitations, job rotations or exemption from work from protective reasons (§ § 1 and 3 MuSchRiV).

With agreement of the pregnant or breast-feeding woman the co-workers should be informed about the results of the workstation evaluation to avoid safety risks proceeding from their own occupational activities.

In general individual occupational limitations as well as limitations of the working time have to be observed. Detailed regulations, which concern activities in the laboratory, are mentioned subsequent. Further information can be drawn from the instruction cards for maternity protection on the homepage of the office for occupational safety (SG Arbeitssicherheit) by the address: [www.as.uni-erlangen.de](http://www.as.uni-erlangen.de).

The occupational health service (Betriebsärztlicher Dienst) and the occupational safety office (SG Arbeitssicherheit) of the ZUV can be caught up at any time for a consulting discussion. It is possible to include the responsible personnel council (Personalrat).

## Occupational limitations and prohibitions in scientific laboratories

For the following activities of pregnant and breast-feeding women detailed occupational prohibitions and working limitations apply:

1. Prohibition of occupational activities, if the life or health of mother and child is endangered when the occupational activities will be continued (§ 3 Abs.1 MuSchG).
2. Prohibition of work at night between 8:00 hrs. p.m. and 6:00 hrs. a.m. (§ 8 Abs.1 MuSchG). If desired by the pregnant women exceptions from this precaution can be made by the Gewerbeaufsichtsamt Nürnberg.
3. Prohibition of additional work, i.e. a working time of more than 8 1/2 hours per day or 90 hours per 2 weeks (§ 8 Abs.1 and 2 MuSchG).
4. Prohibition of work on Sundays or Celebration Days (§ 8 Abs.4 MuSchG).
5. Prohibition of hard manual labour and work in arduous body-bearing, e.g. the frequent lifting and carrying of articles of more than 5 kg weight by hand as well as frequent stretching or bending (§ 4 Abs.1, 2 NR. 1 and 3 MuSchG).
6. Prohibition of activities with an increased accidental risk, e.g. possible slip risk on wet floors or handling dangerous materials that can react in an unexpected manner (§ 4 Abs.2 Nr.8 MuSchG).
7. Prohibition of residence in rooms or areas during the use of ionic rays (x-ray, radioactive radiation) (§ 4 Abs.1 MuSchG; § 22 RöV; § 56 StrSchV). Activities in these areas (in German called "Kontrollbereiche") may take place only after permission by the local health physics officer.
8. Prohibition of handling open radioactive substances or nuclides (§ 4 Abs.1 MuSchG; § 56 StrSchV).
9. For activities with carcinogenic, fruit-damaging or gene-modifying hazardous materials for pregnant and breast-feeding women different regulations apply: Pregnant woman must not be employed with these materials at all, i.e. any occupational exposure to these materials must be avoided. Breast-feeding women may not be employed with these materials, if the threshold level is exceeded (§ 4 Abs.1 MuSchG; § 5 Abs.1 No. 3 and 4 MuSchRiV).

Carcinogenic, fruit-damaging and gene-modifying hazardous materials are listed in the technical rules of the GefahrstoffV TRGS 905. This list is not complete. So, before starting work inform yourself about the material characteristics by the safety data sheet or by the packing label. Following R- and S-records on the indications are of importance:

Xn	R 40 = irreversible damage possible
T	R 45 = may cause cancer
T	R 46 = may cause heritable genetic damage
T	R 47 = may cause birth defects
T	R 49 = may produce cancer in case of inhalation
T	R 61 = may cause damage to the unborn child
Xn	R 63 = may possibly cause damage to the unborn child
T	R 64 = may cause damage for the suckling (through mother's milk)
	S 53 = avoid exposure - observe special instructions before use

In your field of activity the following materials are concerned (status spring 2005):

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.....

10. Prohibition of employment with very toxic, toxic substances or with those materials that can cause chronic diseases, if the threshold level is exceeded (§ 4 Abs.1 MuSchG; § 5 Abs.1 No. 1 MuSchRiV).
11. Prohibition of employment of women of child-bearing age with hazardous materials which contain lead or mercury alkyls, if the threshold level is exceeded (§ 5 Abs.1 No. 5 MuSchRiV).

Explanation for No. 10 and 11: Threshold levels are exceeded, if the respective limit value in the air on the workstation (MAK or TRK) is exceeded or if there is direct skin contact while handling skin absorbable substances (viz. safety data sheets or indication) or if unsuitable, non-sufficient resistant protective gear is used.

12. Prohibition of the occupation with materials, preparations or products, which can - according to experience - transfer pathogens if there are no protective measures to prevent exposure to the pathogens (§ 4 Abs.2 Nr.6 MuSchG; § 5 Abs.1 No. 1 MuSchRiV). This occupation prohibition is of substantial importance for medical, biological and micro-biological laboratories.

Infections, e.g. Röteln (German measles), Ringelröteln (Erythema infectiosum acutum), Virushepatitiden (Virus-Hepatitis) and Zytomegalie (Zytomegaly) are dangerous for both, for mother and child. Pregnant or breast-feeding women may not be employed with infection-risky materials, preparations and products. Pregnant or breast-feeding women may not be employed with activities, which can lead to direct contact with body fluids of patients (skin contact, inhalation of aerosols, mucous membrane contact). Infection risks can be minimised by wearing suitable protective gear (e.g. gloves, eye protector, face-screen, smock, particle-filter). It has to be considered that pregnant or breast-feeding women are endangered by all activities, by which the protection of the protective gear can be impaired. Therefore pregnant or breast-feeding women may not be employed with the following activities in general:

- Activities with stinging, cutting or fragile instruments (e.g. drain tubes, lancets, glass pipettes, fragile centrifuge applications), from which an infection risk arises;
- Reception, unpacking and preparation of investigation material;
- Blood acceptance;
- Filling procedures of plasma / serum;
- Blood preparations;
- Investigation of increments, Liquor, Sputum, etc.;
- Contact with the contaminated material;
- Cleaning of contaminated devices or articles.

Yours sincerely

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Prof. Dr. P. Schmuki