mpsd

Max-Planck-Institut für
Struktur und Dynamik der Materie

Shop safety rules for the Student Machine Shop

Change history

Revision	Date	Change
0	19.02.16	
1	02.08.19	HAZMAT officer, first aider, Annex 2

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1 Responsibilities

1.1 Managing Director/Head of Administration

The Managing Director/Head of Administration is responsible for occupational safety at the **Max Planck Institute for the Structure and Dynamics of Matter** (**MPSD**). Responsibility for compliance with laws and regulations related to health and safety at work in the Student Machine Shop (**SMS**) has been delegated in writing from the Managing Director/Head of Administration to Student Machine Shop management. Student Machine Shop management reports to the Managing Director/Head of Administration regularly on occupational safety matters. The Head of Administration provides financial resources for the procurement of personal protective equipment (protective footwear, protective gloves, safety goggles, etc.) and any other safety devices necessary (e.g. extraction systems). Annex 1 lists the safety functions appointed at **MPSD**.

1.2 Student Machine Shop management

Student Machine Shop management is responsible for technical induction and for occupational safety compliance in the machine shop. This includes:

- Carrying out safety training
- Training on machinery
- Procurement of personal protective equipment (**PPE**) and any other safety mechanisms necessary (e.g. extraction systems), and monitoring their use
- Monitoring of all relevant occupational safety requirements
- Annual performance of hazard assessment in collaboration with the safety officers
- Cooperation with the safety officers, the safety specialist and the company physician
- Timely inspection of all corresponding requiring inspection and other facilities by appropriately competent individuals
- Creation of operating instructions for hazardous materials, plant and processes
- Routine reporting to the Head of Administration about the state of occupational safety in the **SMS**

Training in Shop safety and technical matters is conducted in German or English

1.3 Users of the SMS (research assistants, students, etc.)

Individuals working in the **SMS** must receive general safety training before using the hand tools they have been assigned.

Use of machinery is not permitted until the person has received training on the specific machine.

Safety shoes of safety class S1P or S3, S5 (toecap, puncture-proof plate) must be worn before entering the Student Machine Shop and **always** while performing activities in the Shop.

All users of the **SMS** must fully comply with the operating instructions and the content of safety training sessions. The **PPE** provided must be worn at all times.

Inform Student Machine Shop management immediately if any health problems arise that may be related to the workplace or work equipment in the Shop.

1.4 Access to the Shop and working alone

Both the entrance door and the stationary machine tools are secured against unauthorised use by lockable mains switches or transponder-activated locking devices.

User rights are granted by Student Machine Shop management by unlocking the personal transponder or issuing the relevant key; rights may also be withdrawn.

The regular opening hours of the **SMS** are posted on the entrance door to the Shop in German and English.

Persons who have not completed specialist training in a metalworking profession are PROHIBITED from working alone on machinery in the Student Machine Shop.

Even following basic training, qualified personnel (Head of Student Machine Shop or at least one technician with First Aid training) must ALWAYS be present in the **SMS** while its equipment and tools are being used.

While machine work is being carried out by persons who are not “competent” (i.e. persons who have not completed specialist training in a metalworking profession), at least 2 individuals instructed in occupational safety must ALWAYS be present simultaneously in the **SMS**.

In justifiable exceptional cases (e.g. urgent repairs required outside regular working hours), highly experienced and dependable employees may work alone in the Shop, as long as they wear an emergency call device with a “dead man’s switch” on their person. The rescue chain is specified by Student Machine Shop management in cooperation with **DESY-SAVE/Technical Emergency Service**.

1.5 Support from individuals with a safety function

The safety officers, the safety specialist, the company physician and the HAZMAT officer support Student Machine Shop management in all matters related to occupational safety and health. The safety officers are responsible in particular for ensuring the availability of safe personal protective equipment and other safety mechanisms.

The safety officers report safety deficiencies to Student Machine Shop management without delay and make recommendations for a safer working environment. Safety officers participate in site safety inspections. Student Machine Shop management and the safety officers work together to analyse accidents related to machine shop work and develop preventive actions together.

The safety officers for the SMS at MPSD are

Dr Friedjof Tellkamp	**Tel. 6568**
Dr Guido Meier	**Tel. 6588**

The HAZMAT officer for the SMS at MPSD is

Dr. Thomas Gebert	**Tel. 6589**

1.6 Professional association

The designated professional association for the **SMS** at **MPSD** is

Professional Association for Energy, Textiles, Electrical and Media Products
(BG ETEM)
Beim Strohhause 2
20097 Hamburg, Germany

2 Safety training

Safety training is carried out regularly by Student Machine Shop management:

- New users of the **SMS** always receive general safety training before starting work.
- For work using machinery, additional training is provided for the specific machine.
- Individuals who routinely work in the Shop receive annual refresher/advanced training to supplement general safety training.

Users must confirm their completion of safety training by signing the form included in the annex. Student Machine Shop management documents the training given.

3 Safety devices

Student Machine Shop management must take steps to ensure that the necessary safety devices (extraction units, shields and guards, etc.) are procured as necessary, are in perfect working order, are inspected at regular intervals and are used by Shop personnel or other properly instructed persons.

All users of the **SMS** must make proper use of the safety mechanisms provided. In the event of faults or defective safety devices, stop all work immediately and report the fault to Student Machine Shop management without delay.

4 Personal protective equipment (PPE)

PPE includes protective footwear and gloves, safety goggles and respiratory protection. These products are financed by the **SMS**. Student Machine Shop management is responsible for checking demand and procurement. Persons working in the **SMS** must wear the **PPE** that they are provided with and must handle this equipment with care.

The following **PPE** must be worn when working in the Shop:

Always

- **Protective footwear (safety shoes S1P or S3, S5):** at all times when visiting or working in the **SMS**

As required by the specific activity

- **Protective gloves:** Whenever required by the safety hazard (e.g. for transportation of/manual work on sharp metal parts, when handling hazardous materials)

Gloves MUST NOT be worn when working on machines with accessible rotating parts (drills, lathes, etc.).
Gloves can be trapped, pulling your hand into the machine!

- **Ear protectors:** For work involving high levels of noise (daily noise exposure of 80 dB(A), e.g. grinding machines, saws, milling machines and for machinery to which the blue warning sign “Wear hearing protection” has been affixed. A noise log is kept by Student Machine Shop management to determine the actual level of daily noise exposure.
- **Safety goggles:** For all work on machinery and if eye injuries are likely to result from flying parts (e.g. metal chippings) or jets of liquid (e.g. when using spray bottles)

Spectacle wearers MUST ALSO wear special safety goggles

- **Dust mask:** When handling dusts or fine mists that can be breathed in (e.g. during grinding work)
- **Hair protection:** Especially when working on machinery with rotating or moving parts, long hair (including long beards) must be protected appropriately (hair tie, cap, etc.)
- **Clothing:** Close-fitting clothing must be work while working. Take off any loose items of clothing such as scarves.
- **Jewellery:** All types of jewellery worn openly on the body (e.g. wristwatches, necklaces, rings) are prohibited while working in the **SMS**.

PPE must also be worn even if you are not yourself performing an activity that requires PPE but are in the vicinity of someone who is carrying out dangerous work in the Shop. Chippings can be thrown SEVERAL METRES across a room, for example, and even injure people at nearby work centres.

Also note that decisions about wearing PPE are based on the RISK involved in the work you are performing and not merely the time taken to complete it.

The **SMS** holds standard-issue items of personal protection equipment in stock in the usual sizes and provides these to all users of the **SMS**.

The **SMS** holds safety shoes for occasional use in stock in sizes 39 to 45 for lending out to users.

Users who carry out work in the **SMS** on a regular basis (at least once a week) are recommended to obtain their own safety shoes.

User are themselves responsible for obtaining special-purpose PPE (e.g. specially manufactured, personal ear protectors, ultra-thin gloves, special sizes, orthopaedic inserts for safety shoes, etc.).

5 Skin protection plan/skin protection products

The handling of cooling lubricant in particular can lead to skin damage and skin disorders (see section 9). Concentrated cooling lubricant can irritate the skin. Cooling lubricant in machinery are often contaminated with microorganisms: these can enter the body via small lacerations to the skin (and via dry or chapped skin) and thereby cause either health problems or an actual illness. Since the wearing of gloves is prohibited when operating machinery using cooling lubricant, the skin can be protected only by using special protective skin cream. Such skin creams act like a “liquid glove”, protecting the skin from irritation and stopping pathogens entering the body. Protective skin cream should also be used for tasks producing a lot of dirt, since aggressive post-work hand cleaning procedures are then no longer necessary. The skin should be treated with a skincare cream before breaks and after work. For further details, please see the Skin Protection Plan (see annex 3).

The Skin Protection Plan is posted in the SMS and over the washbasins in the male and female WCs (bldg. 99 EG.051/EG.053).

6 Health surveillance

In some circumstances, work in the **SMS** can involve stresses and hazards that make routine check-ups by the company medical unit advisable, necessary or mandatory.

These include noise hazards, and stresses to skin and the airways due to metalworking fluids or the handling of other hazardous materials.

The hazard assessment is used to determine which kind of health surveillance is needed, and whether the check-up is compulsory or optional pursuant to German health surveillance legislation (ArbMedVV).

7 Conduct in the event of an accident/first aid

Call 2500

(DESY-SAVE/Technical Emergency Service)

DO NOT HANG UP until you are asked to do so by DESY-SAVE.

7.1 General

Every facility must ensure first aid is provided quickly to injured persons in an emergency.

At least one first aider must be present in the **SMS** at all times.

The first aider in the SMS at MPSD is

Erhard Schuster

Student Machine Shop management must ensure that adequate first aid materials are provided in proper working order in the first aid kit. Every person working in the SMS must know where the first aid kit is kept.

Minor (trivial) injuries for which no professional medical help is needed must be entered into the first aid log, which is kept in the first aid kit.

All accidents (except trivial injuries) must be reported to the HR department immediately.

Do NOT leave injured persons unattended and ALWAYS accompany them to the physician. Stay with injured persons until they have received appropriate medical care.

7.2 First aid

At least one first aider must be present or reachable at short notice in the **SMS** at all times.

Independently of this, users of the SMS are advised to refresh their personal knowledge of first aid at regular intervals and in accordance with the currently applicable guidelines.

8 In the event of a fire or power cut

University of Hamburg (UHH) fire safety regulations apply.

Fires must be tackled immediately if it is safe to do so. If clothing has caught fire, smother the flames with anything suitable to hand (fire extinguisher, blanket, jacket, smock, cloth, etc.).

If an initial attempt to extinguish a fire in the Shop fails, evacuate the SMS immediately, close the entrance door and alert **DESY-SAVE/ Technical Emergency Service**.

Call 2500

(DESY-SAVE/Technical Emergency Service)

DO NOT HANG UP until you are asked to do so by DESY-SAVE.

In the event of an alarm, all **SMS** users must gather at the CFEL assembly point.

Wait here until the Technical Emergency Service arrives. The Technical Emergency Service must be briefed by local technical experts.

In the event of a general power cut, the **SMS** switches over to emergency lighting automatically. In this happens, stop all work in the **SMS** immediately. After activating the master emergency stop switch (as required, to prevent machinery starting-up again) evacuate the **SMS** in a quiet and orderly fashion. The **SMS** must not be entered again until

power has been restored. The emergency stop switch must not be deactivated until steps have been taken to ensure that all electrically operated machinery has been switched off. Functional inspections of emergency lighting are made at regular intervals.

9 Handling cooling lubricant /skin protection

Cooling lubricant can damage skin and can be harmful to health if breathed in (as aerosols).

For this reason, always follow the skin protection plan (see section 5).

To avoid breathing in metalworking fluid aerosols, extraction systems (mobile metalworking fluid extraction unit) must be used to remove the cooling lubricant mist created in particular by high machining speeds and/or hot workpieces.

Cooling lubricant in machine tool containers are regularly inspected for contaminants. A cooling lubricant log is maintained.

10 Handling and storage of hazardous materials

A “hazardous material” is a substance or mixture of substances presenting a hazard that has been classified by legislation. Each hazardous material must be marked with a symbol. In certain cases, labelling the container with hazard statements is adequate. Always follow the relevant safety data sheet for the hazardous material. The type of hazard can be indicated with the following GHS hazard symbols on the original container:

When handling and storing hazardous materials, always follow the rules of conduct specified in the corresponding operating instructions. These are posted in the **SMS** in the high-visibility index files. These operating instructions must be read through regularly by **SMS** users.

In the Student Machine Shop, only small amounts of hazardous materials are kept in stock for day-to-day use.

As a general rule, only the quantity of the hazardous material necessary for the work in hand is to be provided at the work centre, and each container must be closed immediately after use. The quantity of the material taken from the container must be stored in a safe receptacle and marked with a clear and durable label stating its name (e.g. WD-40) and the hazard symbol.

Do not use food containers or receptacles resembling food containers to store the material. For fire safety reasons, flammable and highly flammable materials must never be stored or used in any locations where sparks (e.g. from a grinding machine) or rapid rises in temperature are likely. Larger quantities must be stored in the solvent store (bldg. 99a, EG.005).

If no longer required, hazardous materials must be disposed of properly. If disposal is necessary, contact the HAZMAT officer beforehand (Michaela Petrich, tel. 6213).

10.1 Safety data sheets

A (bilingual) safety data sheet printout must be available for every hazardous substance used in the **SMS**. These documents are stored in the **SMS** itself. **SMS** users must be informed about where the sheets are filed and must have access to this information at all times. The collection of safety data sheets is reviewed for currency once a year. A hazardous materials register is kept.

10.2 Training

Users of the **SMS** at **MPSD** are trained by Student Machine Shop management or the HAZMAT officer in the particular dangers of the hazardous materials used according to the hazardous material operating instructions. Typically, this training is given before users start working with the material concerned or as part of annual safety training.

11 Handling and storage of compressed gas bottles

Gas bottles are used to supply the **SMS** with compressed air.

Two 50-litre compressed air gas bottles are located by the **SMS** outer wall near the nitrogen tank foundation. Shut off the bottle valve before longer breaks between work (e.g. at the end of the working day).

Replacement cylinders must be stored in the gas bottle store (bldg. 99a, EG.006).

Compressed gas bottles must be installed by trained personnel only.

Always follow the operating instructions for handling compressed gas bottles.

12 Ladder handling and inspection

Working with ladders is dangerous. Anyone using ladders or steps must follow safety instructions at all times. Operating instructions for ladders are posted in the **SMS**. Student Machine Shop management must ensure ladders and steps are inspected once a year to confirm they are in proper working order (visual inspection and functional test).

13 Handling and inspection of electrical tools

13.1 Portable electrical tools

The term “portable electrical tool” refers to tools that can be moved about while being used or which are easily moved from one location to another while they are still connected to the mains power supply (e.g. hand-operated drills).

The Technical Operations Manager must ensure that all portable electrical tools are inspected at regular intervals. Completed inspections must be indicated clearly with a sticker.

13.2 Stationary electrical tools

Stationary electrical tools are permanently installed items of equipment or equipment that has no carriage attachment and which is so heavy that it is not easy to move from one place to another (e.g. lathes).

Stationary electrical tools should also be inspected together with the portable electrical tools and completed inspections should also be indicated with a sticker.

If defective, electrical tools must be taken out of service immediately repaired promptly and then inspected/tested again. Tools that fail this second test must be decommissioned and disposed of.

Student Machine Shop management must also be notified.

Hamburg,
dated ----------

Hamburg,
dated ----------

---------- (Managing Director)

---------- (Head of Administration)

Annex 1 Safety functions at MPSD

Safety Functions at MPSD

Last updated 25.9.2015

Employer's responsibility for safety *(Arbeitgeberverantwortung im Bereich Sicherheit)*: Head of the Institute/Managing Director Prof. Andrea Cavalleri

Delegated to Head of Administration (Dagmar Schröder-Huse)

Safety Officers *(Sicherheitsbeauftragte)*:

Dr. Friedjof Tellkamp

Dr. Guido Meier

Safety Specialist *(Fachkraft für Arbeitssicherheit)*:

Dr. Jürgen Edelbüttel-Einhaus (B.A.D.)

Radiation Protection Officer *(Strahlenschutzbeauftragter)*:

Dr. Sascha Epp

Company Physician *(Betriebsarzt)*:

Dr. Rolf Küstermann (B.A.D.)

Biological Safety Officer *(Beauftragter für biologische Sicherheit)*:

Dr. Eike Schulz

Laser Safety Officers *(Laserschutzbeauftragte)*:

Dr. Michael Först (Dep. Cavalleri, MPRG Gierz & Loth)

Dr. Valentyn Prokhorenko (Dep. Miller)

Dr. Melanie Schnell (MPRG Schnell)

Chemical Safety Coordinators *(Beauftragte für chemische Sicherheit)*:

Michaela Petrich (Dep. Cavalleri, MPRG Gierz & Loth)

Dr. Andreas Rossos (Dep. Miller)

Dr. Melanie Schnell (MPRG Schnell)

Annex 2 “General safety training” form

Max Planck Institute for the Structure and Dynamics of Matter
Luruper Chaussee 149
22761 Hamburg, Germany

Instruction in the hazards that can occur and the basic protective measures to adopt when handling machinery and hazardous materials in the Student Machine Shop (**SMS**) at the Max Planck Institute for the Structure and Dynamics of Matter (**MPSD**) has been given by

Instructor: Erhard Schuster **Date:**

I have received instruction according to the shop safety rules for the SMS at MPSD concerning the hazards that can occur during the basic handling of machinery and hazardous materials in my work area and have been informed about the necessary protective measures.

Before working with machinery and handling hazardous materials, I am aware that I must inform myself about the specific hazards and protective measures. I am also aware that work in the **SMS** – and particularly using machinery – must not be performed while under the influence of substances that slow reaction times (medicines, alcohol and drugs).

I have read and understood the shop safety rules for the **SMS** at **MPSD** and I agree to comply with these rules at all times. I realise that breaches of these rules may lead to a caution or written warning and, if repeated or in the event of a severe breach, may lead to the revocation of my rights to use the **SMS**.

Last name, first name	Trainee signature

Annex 3 Skin protection plan for the SMS at MPSD

Skin protection before work (also after breaks)	Skin cleansing after work (also before breaks)	Skincare after work (also before breaks)
Stokoderm aqua  Versus water-miscible materials such as metalworking fluids, acids and lyes	**Cewipa liquid**  or **“clean&clever” Liquid soap** 	**Stokolan classic** 

Annex 4 Individual operating instructions

- Operating instructions for lathes
- Operating instructions for milling machines
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