UNIVERSITÄT HOHENHEIM

General Safety Instruction Institute of Phytomedicine (360)

Overview

A. Laboratory Access

B. Safety Regulations and Instructions

C. Accident Prevention

D: Substitution of CMR Substances

E. Emergency Procedures

UNIVERSITÄT HOHENHEIM

A-1. Laboratory Access

- Access permitted **only to employees, students, and trainees** who have completed the **safety instruction**.

- Entry **only during working hours**.

- **No visitors** allowed – see exception regulations.

For exceptions, consult the group manager

UNIVERSITÄT HOHENHEIM

B-1. Safety Regulations

UNIVERSITÄT HOHENHEIM

B-2. Safety Regulations

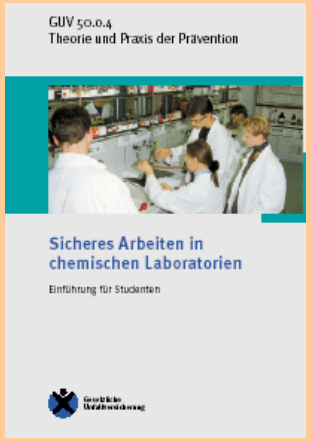
•A **completed safety instruction**, including **documentation and signature** of the instructed person, is an **absolute prerequisite** before starting any laboratory work.

•This safety instruction is performed within each department by the **designated responsible persons**.

Basis of the instruction includes

Laboratory Guidline GUV - R 120

Safe Working Practices GUV - I 8553



B-3. Safety Regulations

In the Laboratory

- **Safety glasses**, **lab coats (cotton)**, and **closed shoes** are mandatory personal protective equipment (PPE).
- **Eating, drinking, and smoking** are strictly prohibited.
- **Working alone** is not permitted (especially on weekends).
- Before starting any laboratory work, **general and, if applicable, specific safety instructions** must be completed.

UNIVERSITÄT HOHENHEIM

C-1. Accident Prevention

•**Measurement procedures on machines** or **chemical reactions** (e.g., drying in an oven) must always be **supervised and monitored**.

•**Chemical containers** with prepared solutions must be **clearly and correctly labeled**.

•Maintain **cleanliness** and **report any damage promptly**.

•**Spilled materials** must be safely absorbed and removed using **absorbent pads**.

•**Transport** chemicals and materials using **buckets or carts with side walls**.

•**Secure gas cylinders** with chains or store them in **approved safety cabinets**.

•Ensure **proper waste disposal** in designated containers and **use resources sparingly**.

C-2. Accident Prevention

Simplified Overview:
New (neu) and Former (alt) GHS Labeling Symbols

GHS-Symbol (neu)					
Signalwort (neu)	Gefahr / Achtung	Gefahr / Achtung	Gefahr / Achtung	Achtung	Gefahr
Gefahrenhinweis (alt)	Explosions-gefährlich	Leicht-/ Hochentzündlich	Brandfördernd		Sehr giftig / Giftig
Symbol nach Anhang II der Richtlinie 67/548/EWG (alt)		F+ F 			T+ T 
GHS-Symbol (neu)					
Signalwort (neu)	Gefahr / Achtung	Achtung	Achtung	Achtung	Gefahr / Achtung
Gefahrenhinweis (alt)	Ätzend	Gesundheits-schädlich	Reizend	Umweltschädlich	
Symbol nach Anhang II der Richtlinie 67/548/EWG (alt)					

UNIVERSITÄT HOHENHEIM

D-1. Handling and Substitution of CMR Substances

(Carcinogenic, Mutagenic, or Reprotoxic Substances)

•What are CMR Substances and Why Must They Be Substituted?
CMR substances are carcinogenic (C), mutagenic (M), or toxic to reproduction (R). They pose a particularly high risk to human health.

•Employer Obligations (§ 7 German Hazardous Substances Ordinance – GefStoffV):

•Under the Hazardous Substances Ordinance (GefStoffV), there is a clear obligation to substitute such substances wherever technically feasible.

•This means hazardous substances must be replaced by less hazardous substances or processes.

•For CMR substances, this substitution requirement is especially strict, as they are classified as particularly hazardous substances — specifically categories 1A and 1B under the regulation.

UNIVERSITÄT HOHENHEIM

D-2. Identification of CMR Substances

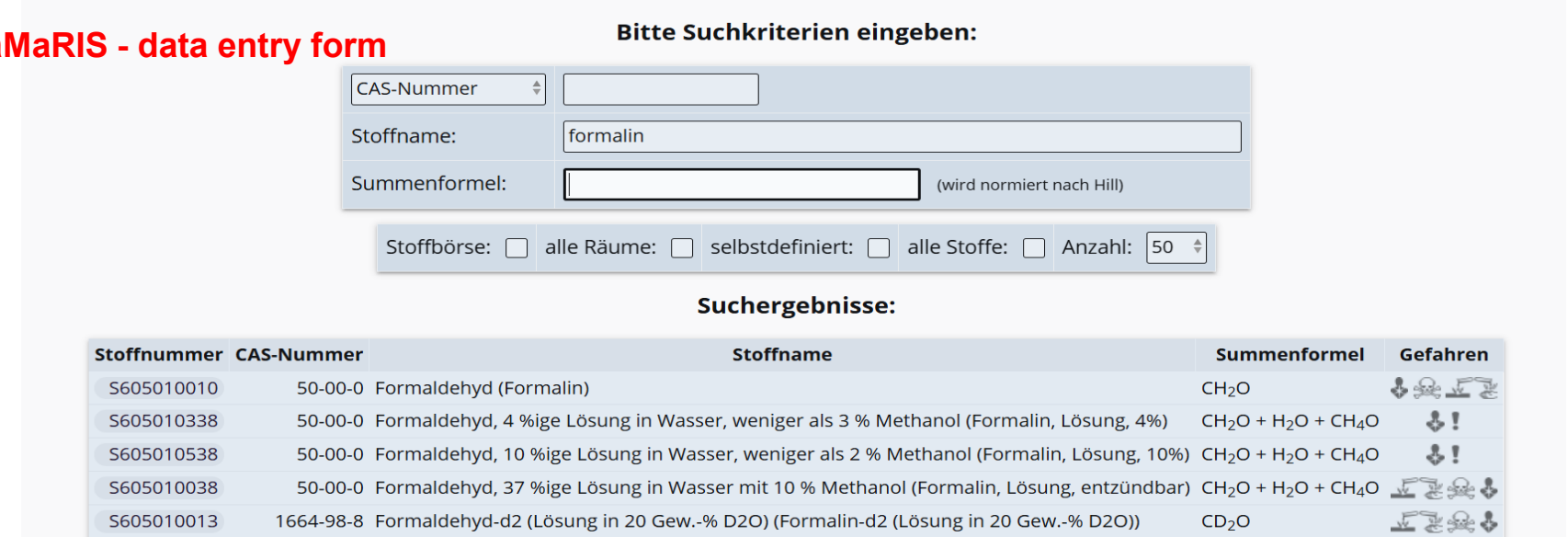
CMR substances are identified using the university-wide Chemical Inventory System **(DaMaRIS – Dangerous Materials Registry Information System)**.

- At **Institute 360**, access to DaMaRIS is provided **through the designated Safety coordinator**

- **Regular Updates:**
  The chemical inventory – **DaMaRIS** – must be **reviewed and updated at least once per year** to ensure accuracy and compliance.

Search Procedures for CMR Substances:
A **specific evaluation** of an individual chemical (e.g., **formalin**) can be performed.
Alternatively, a **comprehensive database search** can be conducted using the **CMR template** to identify all relevant substances.

DaMaRIS - data entry form



Stoffnummer	CAS-Nummer	Stoffname	Summenformel	Gefahren
S605010010	50-00-0	Formaldehyd (Formalin)	CH_2O	
S605010338	50-00-0	Formaldehyd, 4 %ige Lösung in Wasser, weniger als 3 % Methanol (Formalin, Lösung, 4%)	$CH_2O + H_2O + CH_4O$	
S605010538	50-00-0	Formaldehyd, 10 %ige Lösung in Wasser, weniger als 2 % Methanol (Formalin, Lösung, 10%)	$CH_2O + H_2O + CH_4O$	
S605010038	50-00-0	Formaldehyd, 37 %ige Lösung in Wasser mit 10 % Methanol (Formalin, Lösung, entzündbar)	$CH_2O + H_2O + CH_4O$	
S605010013	1664-98-8	Formaldehyd-d2 (Lösung in 20 Gew.-% D2O) (Formalin-d2 (Lösung in 20 Gew.-% D2O))	CD_2O	

UNIVERSITÄT HOHENHEIM

D-3. Substitution Process
Formaldehyde

Information Gathering: Information on a specific CMR substance is obtained by entering the substance into the **chemical registry**, in this case **DaMaRIS (Dangerous Materials Registry Information System)**.

Formaldehyd

Synonym	Formalin
Bezeichnung nach ADR	FORMALDEHYDLÖSUNG mit mindestens 25 % Formaldehyd
Bezeichnung nach GHS	Formaldehyd ... %

Stoffinformationen	
CAS-Nummer	50-00-0
Summenformel	CH_2O
Wichtige Hinweise zur Einstufung	*Für diesen Stoff sind keine P-Sätze hinterlegt. Bitte stellen Sie die passenden Sätze gemäß CLP-Verordnung und den betrieblichen Anforderungen selbst zusammen.*
Klassen	Akut. Tox. 2, Akut. Tox. 4, Hautätz. 1B, Sens. Haut 1A, Muta. 2, Karz. 1B
Piktogramme	
Signalwort	**Gefahr**
H-Sätze	H350 H341 H330 H302 H314 H317
EUH-Sätze	EUH071
Einstufung	2024/2564

UNIVERSITÄT HOHENHEIM

D-4. Substitution Process
Formaldehyde

- **Evaluate Substance-Specific Risk Assessment:**

- **Examine Work Procedures:**
  Review how formaldehyde is originally used in the workflow.

- **Information Search for Substitution Options:**
  - TRGS 600 / 900 on replacement substances
  - Safety Data Sheets (SDS)
  - DaMaRIS chemical registry

- **Preselection of Potential Alternatives:**
  Evaluate alternative substances in terms of feasibility and compatibility with existing work procedures.

- **Key Selection Criteria for Replacement Substances:**
  - Health Hazards
  - Physical and Chemical Risks (e.g., potential for release, fire, explosion)
  - Technical Suitability for your process and workflow
  - Environmental Aspects

UNIVERSITÄT HOHENHEIM

D-5. Handling of CMR Substances

Protection of Health and Life

CMR substances can cause serious health damage even in small quantities and must therefore be **substituted or minimized** whenever possible. This reduces exposure for employees, students, the environment, and third parties.

Employers (or supervisors acting on their behalf) are **obligated under § 5 of the Occupational Health and Safety Act (ArbSchG)** to conduct **individual risk assessments** for all CMR substances used.

In addition, it must be **thoroughly documented** why substitution was not possible.
The documentation must include:

- The **individual risk assessment** for the CMR substance intended for substitution
- The **work procedures** involving the respective CMR substances
- **Comprehensive research** on possible alternative substances or methods, including justification for why substitution is not feasible in this specific case

The legal and technical basis for the minimization requirement is defined in the following essential Technical Rules for Hazardous Substances (TRGS):
TRGS 400 – Risk Assessment
TRGS 500 – Protective Measures
TRGS 600 – Substitution

UNIVERSITÄT HOHENHEIM

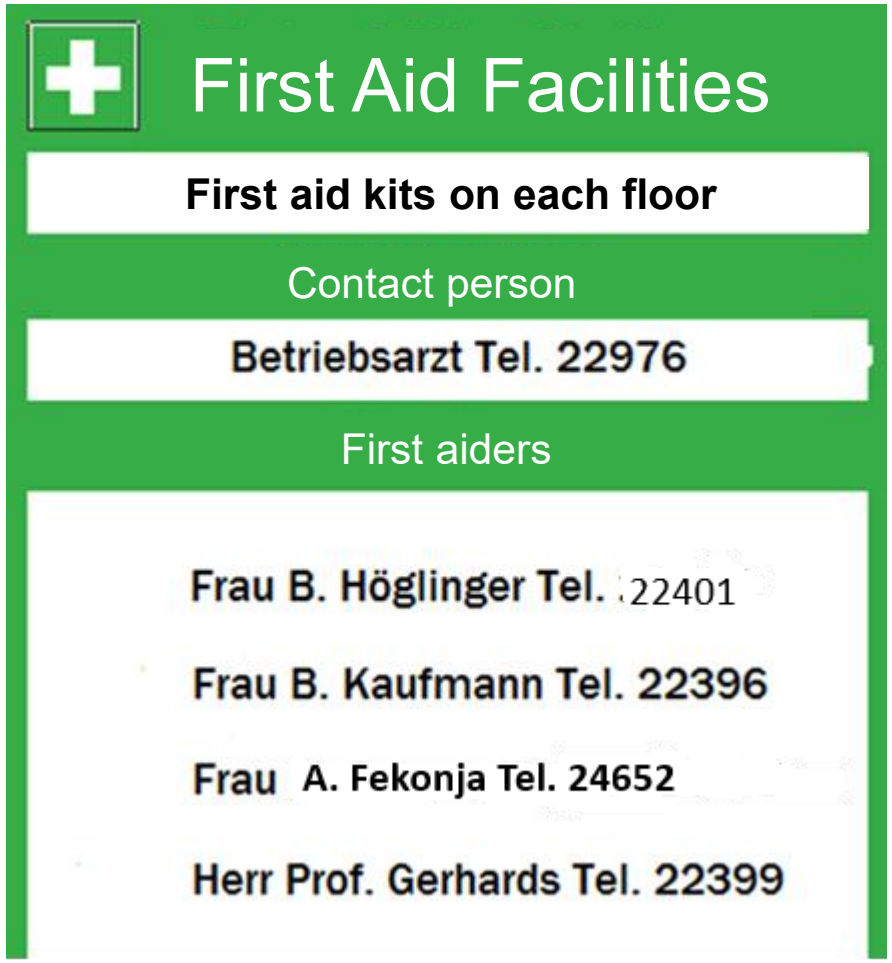
E-1. Emergency Procedures

Stay calm:

- **Identify** what has happened
- **Assess** possible dangers
- **Act** accordingly

Actions:

- **Secure the accident site** (e.g., activate the emergency stop)
- **Move injured persons** out of the danger zone **only if it is safe to do so**
- **Alert others** in the danger area
- **Provide first aid**
- **Call emergency services: (0)112**



UNIVERSITÄT HOHENHEIM

E-2. Emergency Procedures

Safety facilities

Emergency Exits and Escape Routes

First Aid Kits (What to Do)

Alarm Systems, Telephone (Emergency Call)

Emergency Shut-Off for Utilities
Gas, Water, Electricity)

Respiratory Masks, Filters

First Aid Room, Stretcher

Assembly Point

Fire Extinguishers and Fire Alarms

Eye Wash Station

Safety Shower