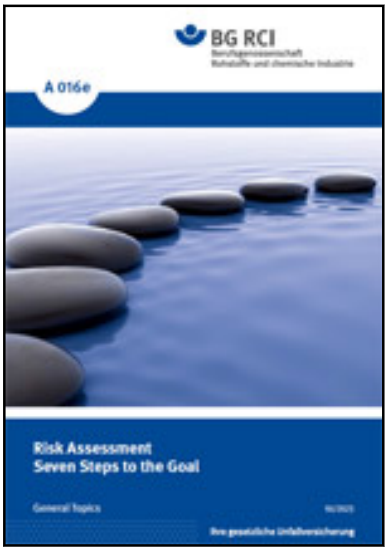
BG RCI
Berufsgenossenschaft
Rohstoffe und chemische Industrie

General Topics

Risk Assessment
Seven Steps to the Goal



A 016e
Edition 10/2023
(Revision of the English edition 5/2022, based on the German edition 10/2023)

Inhaltsverzeichnis dieses Ausdrucks

The paper at hand is focussed on essential items of specific regulations and rules. Therefore, it does not mention all measures required for an individual case. Moreover, the state of the art and occupational medicine as well as the legislative basis may have changed since the issue of this paper.

This paper has been compiled with great care. However, this does not absolve the employer or an authorised person from the duty and responsibility of checking the information to be complete, correct and up to date.

The Act on Occupational Safety and Health uses the term “employer“, the Social Security Code VII and the Accident Prevention Regulations of the Accident Insurance Institutions say “entrepreneur“. Both terms are not completely identical, because an entrepreneur does not necessarily employ workers. This fact is irrelevant for the topic treated in this Code of Practice, and the term „entrepreneur“ is used here.

VISION ZERO

VISION ZERO is the vision of a world without occupational accidents and work-related illnesses. In this connection the avoidance of lethal and severe occupational accidents and illnesses is given highest priority. The goal of a comprehensive culture of risk prevention is VISION ZERO.

Further information concerning the VISION ZERO Prevention Strategy is available at: http://visionzero.global/.

This Code of Practice particularly deals with the Golden Rule
"Identify Hazards – Control Risks"

1 Introduction

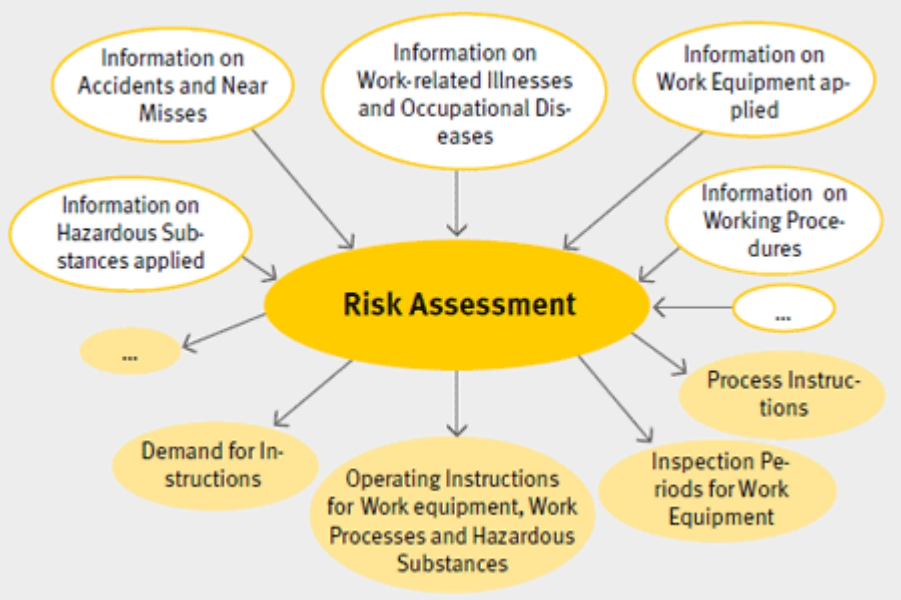
Risk assessments are the essential instrument of occupational safety and health and the key to prevent occupational accidents, occupational illnesses and health hazards.

The benefit of risk assessments is obvious:

- Important information and hints are obtained about
  - hazards and stresses at workplaces,
  - essential technical and organisational safeguard measures,
  - the necessary use of personal protective equipment,
  - contents for instructions.
- Expenses and downtime in consequence of accidents or illnesses may be reduced.
- Risk assessments are a management tool for persons in charge and help to improve the economy, competitiveness and corporate image by reasonable acting.
- Risk assessments are an essential criterion in the context of auditing processes.

The risk assessment takes account of the common duty of care of the management.

Figure 1: The risk assessment occupies the centre stage



The system of implementation and documentation of the risk assessment presented on the following pages is based on the guidelines of DGUV Grundsatz 311-003 “Erstellen von Handlungshilfen zur Gefährdungsbeurteilung“ and meets the recommendations of the “Guideline Risk Assessment and Documentation“[1] (“Leitlinie Gefährdungsbeurteilung und Dokumentation“[1]) of the Joint German Occupational Safety and Health Strategy (Gemeinsame Deutsche Arbeitsschutzstrategie – GDA).

This Code of Practice is the basic paper of BG RCI with regard to risk assessments. Guidance documents for implementation and documentation of the risk assessment are available at medienshop.bgrci.de as well as downloadcenter.bgrci.de.

The management should take care of an implementation of the risk assessment in the company which are consistent according to defined quality standards (e. g. specifications given in this publication) and for which the specific responsibilities are set.

1 See Appendix 5, No. 75

2 Legislative Basis

The duty of implementation and documentation of risk assessments by an entrepreneur results from

- §§ 5 and 6 of the Act on the Protection at Work (Arbeitsschutzgesetz[2] – ArbSchG),
- § 3 of the General Federal Mining Ordinance (Allgemeine Bundesbergverordnung[3] – ABBergV) for the mining branch,
- Accident Prevention Regulation “Principles of Prevention“ (DGUV Regulation 1).

This obligation furthermore results from:

Workplace Ordinance (Arbeitsstättenverordnung – ArbStättV)	→	establishing and operating workplaces, including workstations
Ordinance on Industrial Safety and Health (Betriebssicherheitsverordnung – BetrSichV)[4]	→	work equipment, particularly determining scope of inspections and inspection periods
Ordinance on Biological Agents (Biostoffverordnung – BioStoffV)	→	activities with biological agents
Ordinance on Hazardous Substances (Gefahrstoffverordnung – GefStoffV)[5]	→	activities with hazardous substances, particularly basic obligations and determination of further safeguard measures including fire and explosion hazards
Youth Protection Act (Jugendschutzgesetz – JuSchG)	→	concerning adolescents
Noise and Vibrations Occupational Safety and Health Ordinance (Lärm-Vibrations-Arbeitsschutzverordnung – LärmVibrationsArbSchV)	→	activities inducing noise or vibration hazards
Ordinance on the Manual Handling of Loads at Work (Lastenhandhabungsverordnung – LasthandhabV)	→	manual handling of loads
Maternity Protection Act (Mutterschutzgesetz – MuSchG)	→	concerning pregnant women and breast-feeding mothers and their children
DGUV Rules 112-189 to 112-201	→	personal protective equipment
DGUV Information 213-855	→	risk assessment in laboratories

2 See Appendix 5, No. 2
3 See Appendix 5, No. 1
4 Detailed regulations are also given in Technical Rules for Safety in the Workplace (TRBS) – see Appendix 5, No. 5 et seqq.
5 Detailed regulations are also given in Technical Rules for Hazardous Substances (TRGS) – see Appendix 5, No. 12 et seqq.

3 Risk Assessment

The risk assessment is the systematic investigation and evaluation of hazards and stresses of employees at their workplace including the determination of safeguard measures.

3.1 How do hazards and stresses occur?

A hazard occurs when employees get in contact with sources of risks (e. g. machines, working materials). These sources of risks can pose harmful effects which can lead to health damages of the employees.

Sources of risk following § 5 Section 3 of the Act on the Protection at Work (Arbeitsschutzgesetz) are among others the design of the workplace, work equipment, working procedures, workflows, working hours as well as their interaction. Effects which are mentioned therein in an exemplary way are physical, chemical and biological effects. Hazards, which are characterized by equal or similar mode of action are combined to form groups of risk- and stress factors. The Code of Practice A 017e “Risk Assessment – Hazard Catalogue“ of the BG RCI contains a catalogue of general hazard and stress factors.

Figure 2: Development of hazards and stresses

3.2 Parties involved in the Implementation of a Risk Assessment

The management has the duty of implementing a risk assessment. It may delegate this task to qualified persons, e. g. a manager (see Code of Practice A 006 of BG RCI for questions regarding the responsibility for occupational safety and health[6]).

The following persons advise the management in order to carry out a successful risk assessment:

- OSH Professionals,

6 See Appendix 5, No. 39

- Occupational Physicians,
- Works Council.

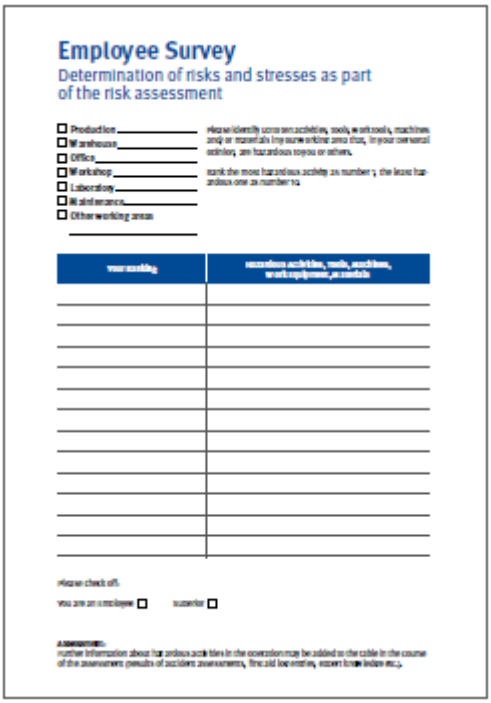
Additionally, persons from the immediate operational environment like Safety Delegates or colleagues are to incorporate. They know best about hazards and stresses they are exposed to.

For example, colleagues may participate in

- employee surveys (see Figure 3 and Appendix 2),
- discussions, e. g. during instructions,
- joint inspections of the workplace.

Additionally, external experts for occupational safety and health may be asked for consultation (e. g. accident insurance institutions or relevant public authorities, safety-related services, consultation offices).

Figure 3: Worksheet for employee survey (see Appendix 2)


Employee Survey
Determination of risks and stresses as part of the risk assessment
Production
Warehouse
Office
Workshop
Laboratory
Maintenance
Other working areas

3.3 Reasons for the Risk Assessment

The risk assessment has to be implemented before starting the activity, it has to be reviewed regularly and has to be updated on the following occasions:

- Planning an investment project,
- new work equipment,
- use of new working materials,
- changes of working areas or traffic areas,
- changes of working procedures and workflows,
- changes of the company organisation,
- changes of the legal framework or regulations,

- changes of state of the art,
- accidents, near misses, occupational illnesses and other work-related diseases,
- changes in staff.

“The Act on Protection at Work does not intend regular complete repetitions of the risk assessment. The entrepreneur is to check and, if necessary, to improve the process of the risk assessment within the scope of systematic OSH activities.“ (Appendix 3 No. 7 of LASI Leitfaden 59)

4 Implementation and Documentation of the Risk Assessment

The implementation of the risk assessment may be divided into seven steps, which are described here (see also the file “Gefährdungsbeurteilung – Arbeitshilfen“[7]).

Figure 4: Seven steps of a risk assessment

4.1 Step 1: Gathering Data of the Company Organisation

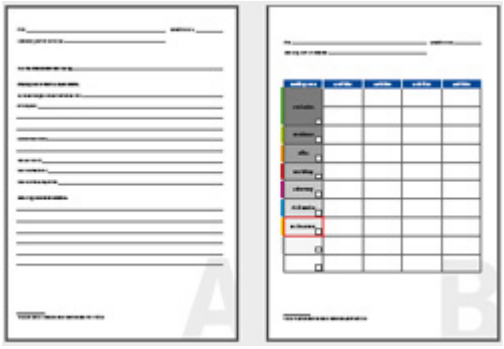
Implementation

7 See Appendix 5, No. 68

Before starting the risk assessment for each activity you should rather collect structured data on your company. Based on this information you can implement the risk assessment step by step for manageable sections. In most cases segmentation into working areas like production, storage, office, workshop and company-specific working areas (e. g. construction site, laboratory, field sales force, maintenance) is helpful.

Documentation

Worksheets A and B[8]



4.2 Step 2: Acquisition of Activities

Implementation

After the determination of working areas you record the activities related to these areas. Split up the activities only as detailed as necessary. It is appropriate not to list each activity/work step for operating a machine but to subsume them under the term “Operation of Machine XY“. Similar activities/work steps may be subsumed as well.
Besides normal work processes activities with an increased risk of accidents must be considered, e. g. adjustment, cleaning, start-up, maintenance and trouble-shooting.

Documentation

Worksheet B[9]

8 The worksheets mentioned are available in Appendix 1 of this publication.
9 The worksheet is available in Appendix 1 of this publication.

4.3 Step 3: Investigation of Potential Hazards and Stresses

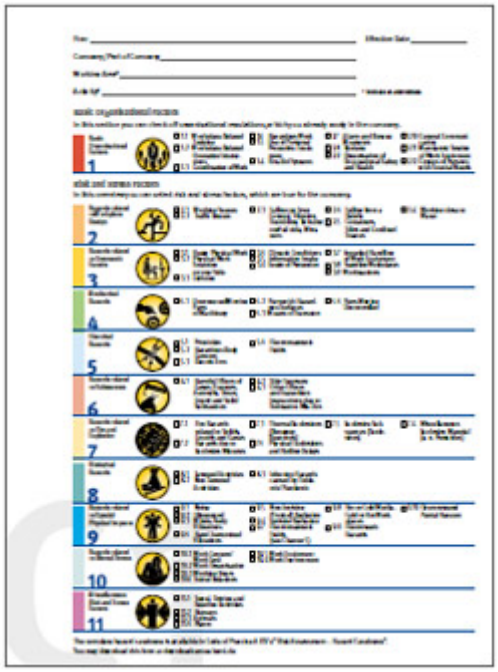
Implementation

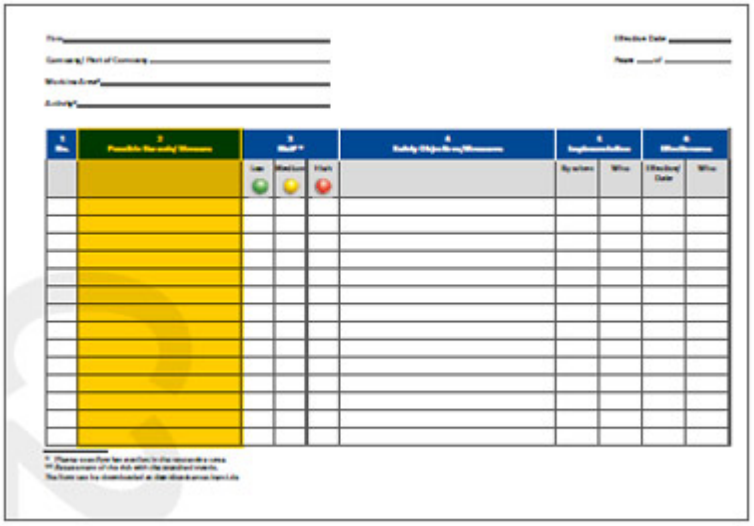
On site you determine the specific hazards and stresses of each activity, e. g. a pinching point or a shearing point at machine “XY“ when inserting a workpiece. Worksheet C1 comprises the overview of hazards and stress factors explained in Code of Practice A 017e of BG RCI in a detailed hazard catalogue. Consider groups of persons who particularly are in need of protection like adolescents, pregnant or breast-feeding women and people with disabilities. Consider also hazards in the working environment (e. g. adjoining workplaces and machines) as well as the involvement of external companies. Document all hazards and stresses you have determined, preferably related to the working area, to avoid unnecessary replication.

Documentation

Worksheets C1 and C2, Column 2[10]

10 The worksheets mentioned are available in Appendix 1 of this publication.





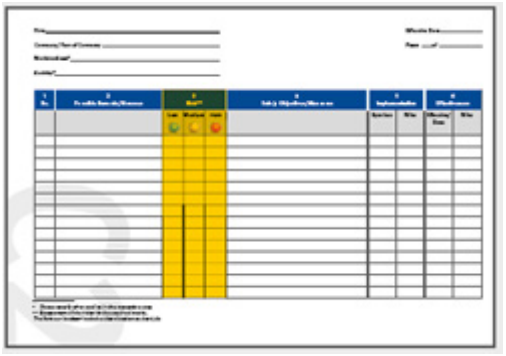
4.4 Step 4: Evaluation of the Risk

Implementation

Laws, Ordinances and related Technical Rules as well as sector-specific regulations of the Accident Insurance Institutions include specifications which must be used for the evaluation, e. g. limit values for hazardous substances or noise impact. If these specifications are lacking, you evaluate the risks involved with the activities based on the hazards and stresses determined. The evaluation follows the consideration of probability of emergence and potential severeness of injury or illness.

Documentation

Worksheet C2, Column 3[11]



4.5 Step 5: Determination of Protection Targets and Safeguard Measures

Implementation

Protection targets and specific safeguard measures are recorded in Column 4 of Worksheet C2. Measures already realised may be documented here as well.

When choosing measures you have to consider the following order:

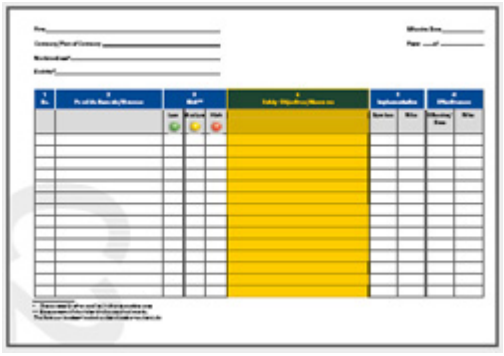
1. **Substitution** (e. g. replacement of hazardous substances)
2. **Technological safeguard measures** (e. g. covering of hazardous areas)
3. **Organisational safeguard measures** (e. g. minimising the duration of stay in noise areas)
4. **Individual safeguard measures** (e. g. personal protective equipment)
5. **Behavioural safeguard measures** (e. g. instructions, training programmes

The goal is to reduce the risk to an acceptable extent.[12]

Documentation

Worksheet C2, Column 4[13]

11 The worksheet is available in Appendix 1 of this publication.
12 See also the Assessment Matrix according to Nohl (Appendix 3 in this publication)
13 The worksheet is available in Appendix 1 of this publication.



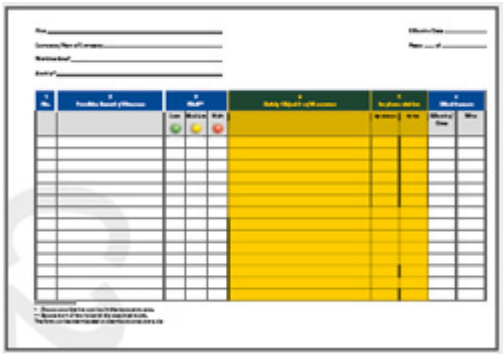
4.6 Step 6: Realisation of Measures

Implementation

Assign the implementation of measures to qualified persons. Arrange mandatory deadlines for the implementation.

Documentation

Worksheet C2, Columns 4 and 5[14]



4.7 Step 7: Controlling the Effectiveness

Implementation

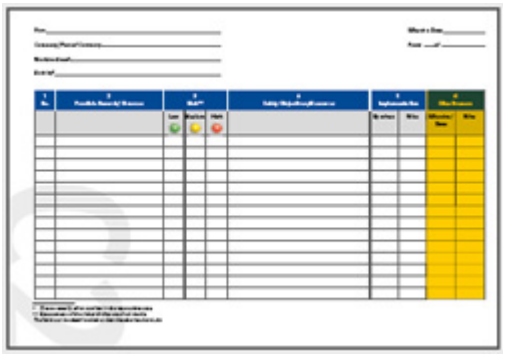
Verify if the representative has implemented the determined measures for occupational safety and health in time. Check if the hazard has been really eliminated or reduced at least. It is important to clarify whether the measures have induced new additional hazards.

A second person should control the effectiveness. This person should be a superior of the creator of the risk assessment.

14 The worksheet is available in the Appendix 1 of this publication.

Documentation

Worksheet C2, Column 6[14]



4.8 Advice for Documentation and Perpetuation

In general, risk assessments are implemented in a work-related way. The documentation of these risk assessments may be combined by working areas, if different tasks have similar hazards and stresses (e. g. in workshops).

A documentation related to functional groups is another possibility (e. g. maintenance personnel, plant operators, or cleaning personnel and office workers).

Groups of persons in need of special protection, e. g. pregnant or breast-feeding women, adolescents or persons with disabilities may require an (additional) individual documentation.

Documents and operational arrangements which already exist may be used for the risk assessment as co-applicable documents.

Examples for co-applicable documents:

- Operational instructions for hazardous substances and machines
- Register of hazardous substances
- Risk assessment of the manufacturer or distributor of hazardous substances according to § 6 Section 7 of the Ordinance on Hazardous Substances (GefStoffV)
- Explosion protection document according to § 6 Section 9 of the Ordinance on Hazardous Substances (GefStoffV)
- Procedural instructions, also given in DIN standards
- Safety and working area analysis, e. g. job-safety-analysis
- Job descriptions
- Permits to work or licences
- Noise reduction programmes
- Inspection reports and measurement logs

The retention period for documents about risk assessments is not regulated by law. Nevertheless, a long-term storage is recommended.

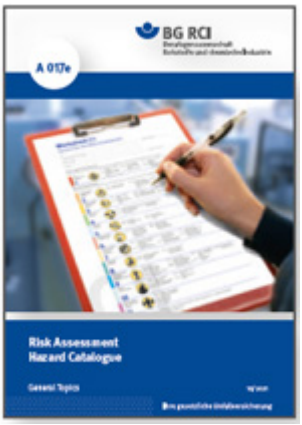
14 The worksheet is available in the Appendix 1 of this publication.

The risk assessment has to be updated and continued regularly. Reasons are listed in Section 3.2 of this Code of Practice.

5 Guidance Documents for Implementation and Documentation of the Risk Assessment

Several guidance documents are available for the implementation and documentation of the risk assessment. Codes of Practice A 016e and A 017e can be used for implementation and documentation of the risk assessment in every sector. Furthermore, BG RCI offers more specific or more in-depth guidance documents, which can be found via the so-called “Auswahlassistent“ (selection assistant) at awa.bgrci.de.

- Typical risk and stress factors, examples of safeguard measures as well as relevant regulations and Technical Rules for each risk factor are compiled in **Code of Practice A 017e “Risk Assessment – Hazard Catalogue“**[15] of BG RCI. This hazard catalogue is updated regularly and enables the user to become acquainted with specific issues when needed, supported by a comprehensive list of legal references and papers of BG RCI. Complementarily, several Codes of Practice of BG RCI include hazard catalogues as well, e. g. T 034 “Gefährdungsbeurteilung im Labor“ (DGUV Information 213-855), the publications of the K-series for risk assessment in small businesses.



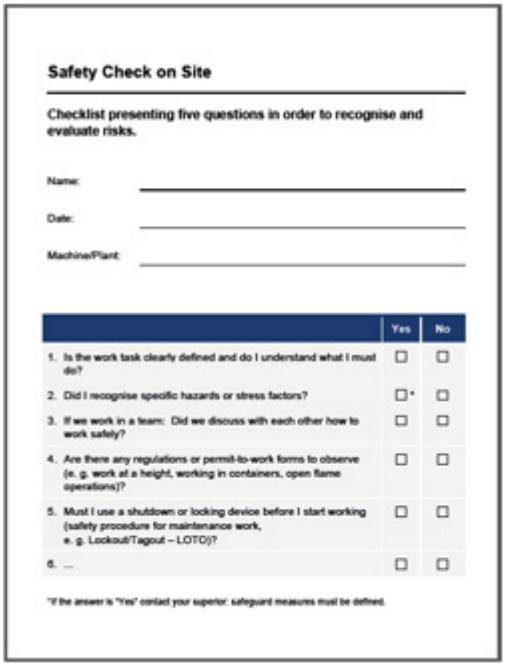
- File **“Gefährdungsbeurteilung – Arbeitshilfen“**[16] to fill in work sheets by hand.

15 See Appendix 5, No. 43a
16 See Appendix 5, No. 68

- **GefDok light**[17]: A simple software using Excel sheets and WORD files as forms which can be filled in at the PC (available in English, too).
- **GefDok KMU**[18]: A software for the documentation of the risk assessment made for small and medium-sized enterprises in different sectors. The software may also be useful for businesses or business sections of larger companies. It provides a number of exemplary company organisations for individual sectors which may be used as a model. The software optionally enables the evaluation of the residual risk after the implementation of safeguard measures.

- **GefDok Pro** supports the preparation of a risk assessment by using a database. Data sets created with GefDok KMU can be uploaded into GefDok Pro. A demo version in the “Kompendium Arbeitsschutz“ offers a first insight how to use GefDok Pro. It can be obtained from Jedermann Verlag.

An additional short safety check the employee can carry out directly before the start of work, e. g. before maintenance work or service starts. This procedure does not replace the duty of documentation of the risk assessment as demanded in the Act on Protection at Work (ArbSchG) or the General Federal Mining Ordinance (ABBergV). An example for this sort of check which has to be adapted to operational conditions is available at the “Downloadcenter“ of BG RCI (see also Appendix 4).



Safety Check on Site

Checklist presenting five questions in order to recognise and evaluate risks.

Name: _____

Date: _____

Machine/Plant: _____

	Yes	No
1. Is the work task clearly defined and do I understand what I must do?	☐	☐
2. Did I recognise specific hazards or stress factors?	☐*	☐
3. If we work in a team: Did we discuss with each other how to work safely?	☐	☐
4. Are there any regulations or permit-to-work forms to observe (e. g. work at a height, working in containers, open flame operations)?	☐	☐
5. Must I use a shutdown or locking device before I start working (safety procedure for maintenance work, e. g. Lockout/Tagout – LOTO)?	☐	☐
6. ...	☐	☐

*If the answer is "Yes" contact your superior: safeguard measures must be defined.

By using the Code of Practices of the K-Series you are able to implement a risk assessment in your small enterprise without a lot of effort.

The guidance documents have been created in a modular way. Besides the basic module K 001 “Gefährdungsbeurteilung für Kleinbetriebe – Allgemeiner Teil“ we offer supplementary modules by further publications for individual industry branches:

- K 002 “Gefährdungsbeurteilung für Kleinbetriebe – Dekoration und innenliegender Sonnenschutz“

17 See Appendix 5, No. 88
18 See Appendix 5, No. 89

- K 003 “Gefährdungsbeurteilung für Kleinbetriebe – Sonnenschutz im Freien“
- K 004 “Gefährdungsbeurteilung für Kleinbetriebe – Bodenlegen“
- K 005 “Gefährdungsbeurteilung für Kleinbetriebe – Ausbau Wand und Decke“
- K 006 “Gefährdungsbeurteilung für Kleinbetriebe – Polsterei“
- K 007 “Gefährdungsbeurteilung für Kleinbetriebe – Reitsportsattlerei“
- K 008 “Gefährdungsbeurteilung für Kleinbetriebe – Fahrzeugsattlerei“
- K 009 “Gefährdungsbeurteilung für Kleinbetriebe – Feintäschnerei“
- K 010 “Gefährdungsbeurteilung für Kleinbetriebe – Gerbereien“
- K 013 “Gefährdungsbeurteilung für Kleinbetriebe – Kies und Sand“

The series is expanded continuously.

Furthermore, BG RCI offers the “Baukästen Gefährdungsbeurteilung“ („Kits for Risk Assessments“). These are transformed one by one into the K-Series.

Kits for Risk Assessments

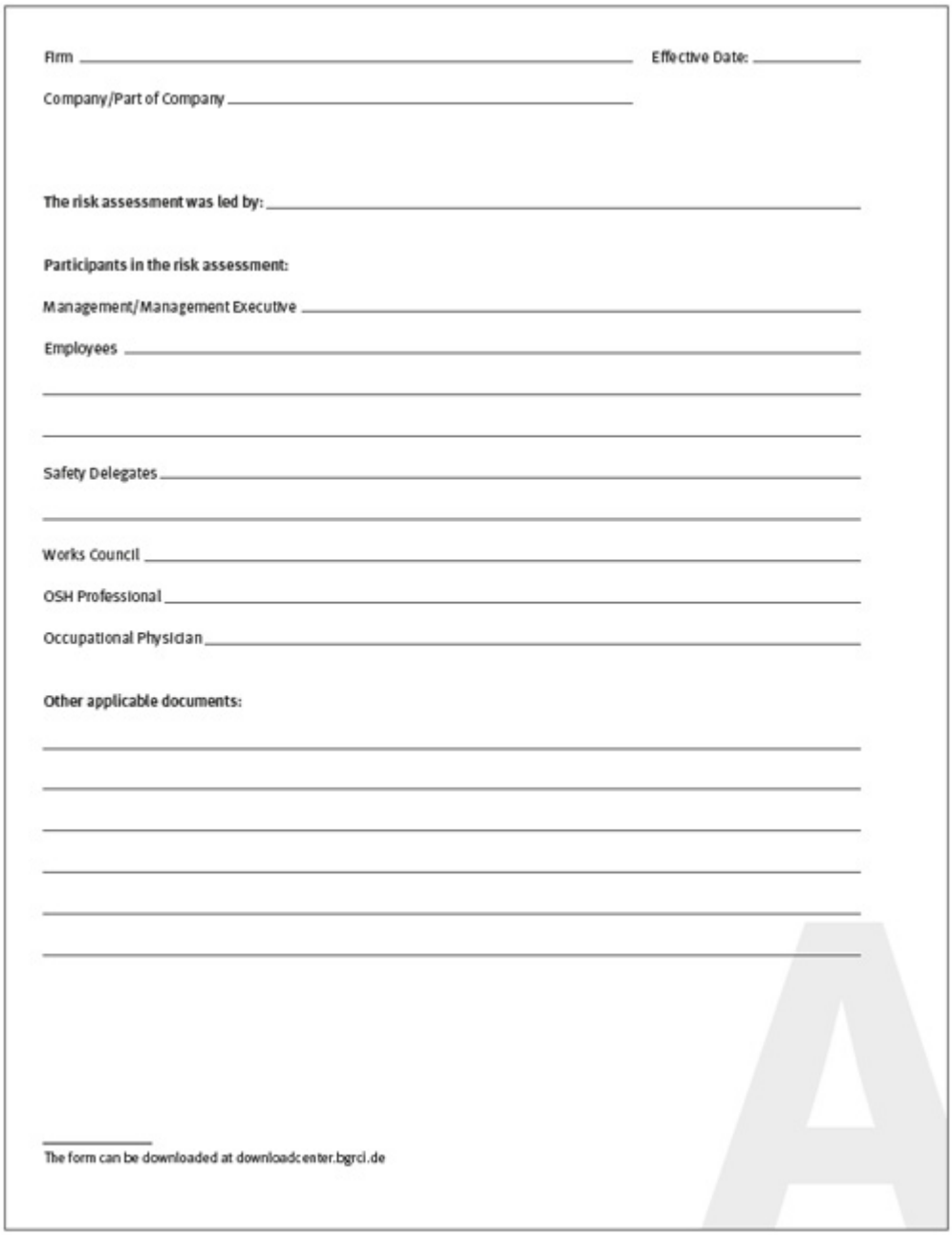
- CD 719: Natural Stone Industry
- CD 721: Recycling
- CD 724: Prefabricated Concrete Units

- CD 725: Concrete Stone Industry
- CD 726: Ready-mixed Concrete/Concrete Pumps
- CD 727: Plastics Industry
- CD 728: Small-scale Construction Sites
- CD 729: Processing of Natural Stones
- CD 730: Concrete Pipes

All guidance documents of BG RCI are described in the “Medienshop“ of BG RCI. The documents are available as editable PDF files in the download center at downloadcenter.bgrci.de/shop/gefb.

Appendix 1: Worksheets for the Risk Assessment

Worksheet A: Risk Assessment – Cover Sheet



Firm _____ Effective Date: _____

Company/Part of Company _____

The risk assessment was led by: _____

Participants in the risk assessment:

Management/Management Executive _____

Employees _____

_____

_____

Safety Delegates _____

_____

Works Council _____

OSH Professional _____

Occupational Physician _____

Other applicable documents:

_____

_____

_____

_____

_____

_____

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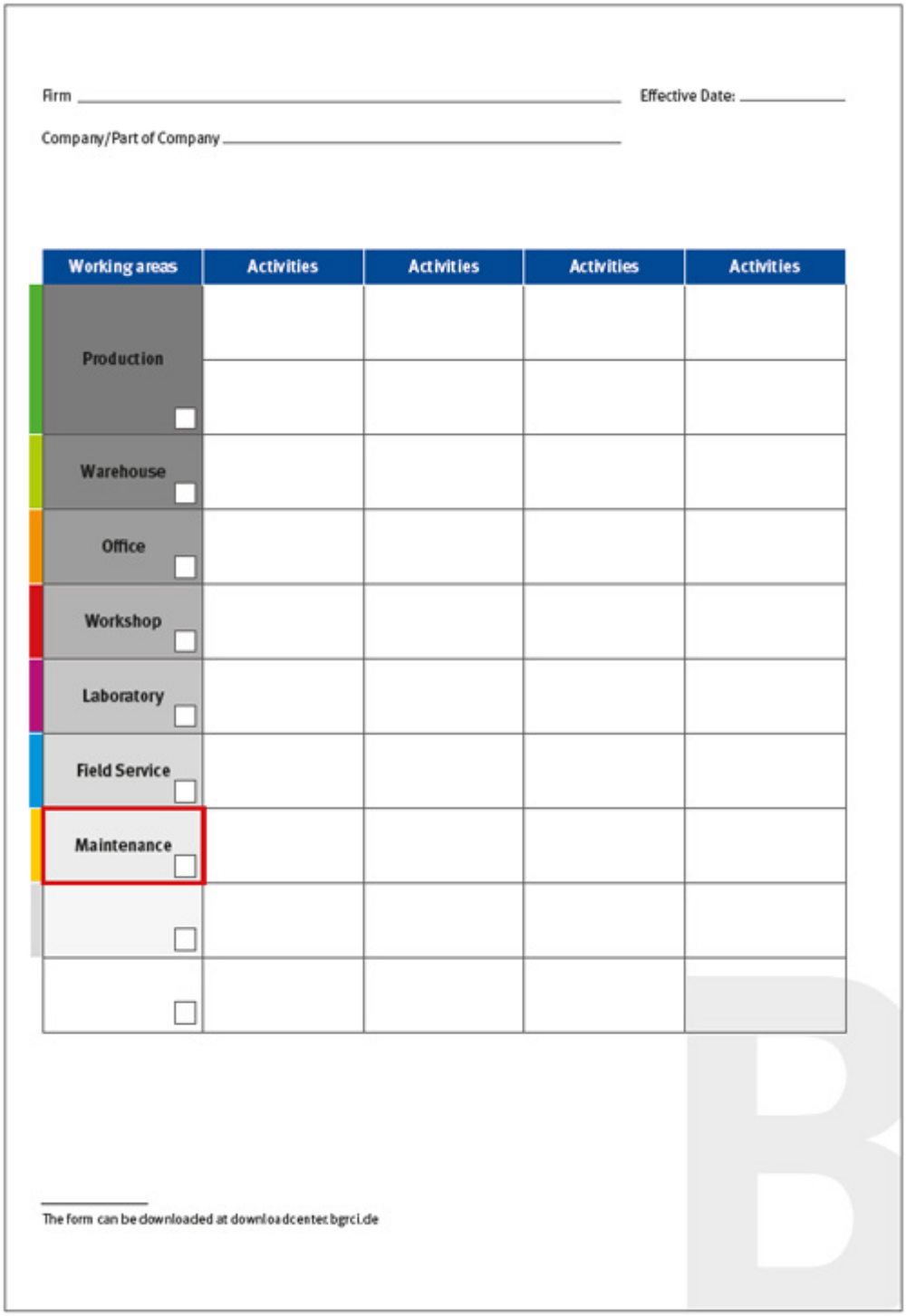
The form can be downloaded at downloadcenter.bgrci.de

This form can be downloaded (DIN A4 size) at downloadcenter.bgrci.de

Worksheet B: Risk Assessment – Company Organisation



Firm _____ Effective Date: _____

Company/Part of Company _____

Working areas	Activities	Activities	Activities	Activities
Production ☐				
Warehouse ☐				
Office ☐				
Workshop ☐				
Laboratory ☐				
Field Service ☐				
Maintenance ☐				
☐				
☐				

The form can be downloaded at downloadcenter.bgrci.de

This form can be downloaded (DIN A4 size) at downloadcenter.bgrci.de

Worksheet C1: Factors for the Risk Assessment

Factors for the Risk Assessment

Firm _____ Effective Date _____

Company/Part of Company _____

Working Area* _____

Activity* _____ * indicate as appropriate.

Basic Organisational Factors

In this section you can check off organisational regulations, which you already apply in the company.

Basic Organisational Factors 1

- ☐ 1.1 Workplace-Related Training
- ☐ 1.2 Workplace-Related Operating Instructions
- ☐ 1.3 Coordination of Work
- ☐ 1.4 Hazardous Work
- ☐ 1.5 Use of Personal Protective Equipment
- ☐ 1.6 First-Aid Systems
- ☐ 1.7 Alarm and Rescue Measures
- ☐ 1.8 Hygiene
- ☐ 1.9 Organisation of Occupational Safety and Health
- ☐ 1.10 General Communication
- ☐ 1.11 Mandatory Testing of Work Equipment
- ☐ 1.12 Groups of Persons with Special Needs

Risk and Stress Factors

In this overview you can select risk and stress factors, which are true for the company.

Hazards related to Workplace Design 2

- ☐ 2.1 Working Spaces
- ☐ 2.2 Traffic Routes
- ☐ 2.3 Falling on Even Ground, Slipping, Stumbling, Twisting one's Ankle, Missteps
- ☐ 2.4 Falling from a Height
- ☐ 2.5 Containers, Silos and Confined Spaces
- ☐ 2.6 Working close to Water

Hazards related to Ergonomic Factors 3

- ☐ 3.1 Heavy Physical Work
- ☐ 3.2 Physical Work Straining on one Side
- ☐ 3.3 Lighting
- ☐ 3.4 Climatic Conditions
- ☐ 3.5 Information Intake
- ☐ 3.6 Extent of Perception
- ☐ 3.7 Impeded Handling of Work Equipment
- ☐ 3.8 Standing Workplaces
- ☐ 3.9 Workstations

Mechanical Hazards 4

- ☐ 4.1 Unprotected Moving Parts of Machinery
- ☐ 4.2 Parts with Hazardous Surfaces
- ☐ 4.3 Means of Transport
- ☐ 4.4 Parts Moving Uncontrolled

Electrical Hazards 5

- ☐ 5.1 Principles
- ☐ 5.2 Hazardous Body Currents
- ☐ 5.3 Electric Arcs
- ☐ 5.4 Electromagnetic Fields

Hazards related to Substances 6

- ☐ 6.1 Harmful Effects of Gases, Vapours, Aerosols, Dusts, Liquid and Solid Substances
- ☐ 6.2 Skin Exposure
- ☐ 6.3 Other Effects and hazardous Interactions due to Substance Mix-Ups

Hazards related to Fire and Explosion 7

- ☐ 7.1 Fire Hazards related to Solids, Liquids and Gases
- ☐ 7.2 Hazards due to Explosive Mixtures
- ☐ 7.3 Thermal Explosions (Runaway Reactions)
- ☐ 7.4 Physical Explosions and Boiling Delays
- ☐ 7.5 Explosive Substances (Explosives)
- ☐ 7.6 Miscellaneous Explosive Material (e. g. Peroxides)

Biological Hazards 8

- ☐ 8.1 Targeted Activities
- ☐ 8.2 Non-Targeted Activities
- ☐ 8.3 Infection Hazards caused by Epidemic/Pandemic

Hazards related to Special Physical Impacts 9

- ☐ 9.1 Noise
- ☐ 9.2 Ultrasound
- ☐ 9.3 Whole-Body Vibrations
- ☐ 9.4 Hand-Transmitted Vibrations
- ☐ 9.5 Non-Ionising (Optical) Radiation
- ☐ 9.6 Ionising Radiation
- ☐ 9.7 Electromagnetic Fields (see Chapter 5)
- ☐ 9.8 Hot or Cold Media – Cold or Hot Workplaces
- ☐ 9.9 Electrostatic Hazards
- ☐ 9.10 Overpressure/ Partial Vacuum

Hazards related to Mental Stress 10

- ☐ 10.1 Work Content/ Work Task
- ☐ 10.2 Work Organisation
- ☐ 10.3 Working Hours
- ☐ 10.4 Social Relations
- ☐ 10.5 Work Equipment
- ☐ 10.6 Work Environment

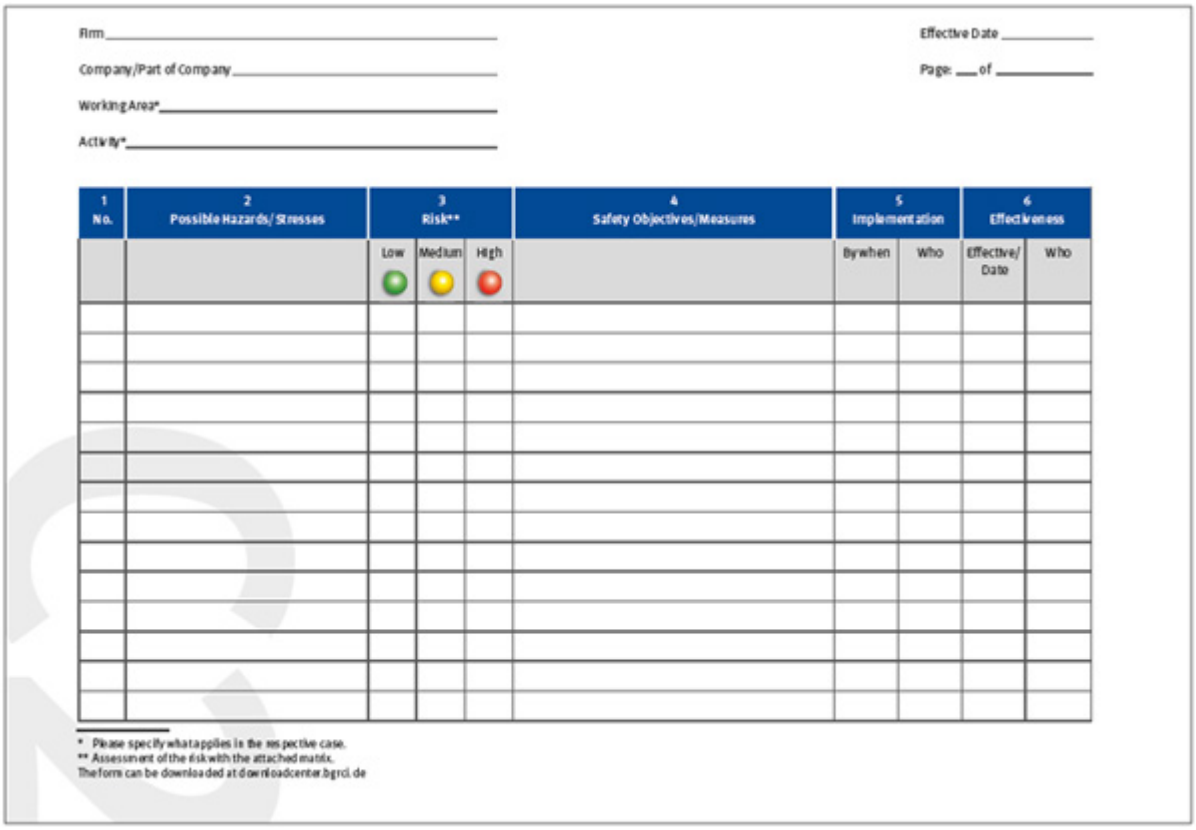
Miscellaneous Risk and Stress Factors 11

- ☐ 11.1 Travel, Driving and Steering Activities
- ☐ 11.2 Humans
- ☐ 11.3 Animals
- ☐ 11.4 Plants

The complete hazard catalogue is available in Code of Practice A 017e "Risk Assessment – Hazard Catalogue".
You may download this form at downloadcenter.bgrci.de

This form can be downloaded (DIN A4 size) at downloadcenter.bgrci.de

Worksheet C2: Risk Assessment – Documentation



Firm _____ Effective Date _____

Company/Part of Company _____ Page: ___ of _____

Working Area* _____

Activity* _____

1 No.	2 Possible Hazards/ Stresses	3 Risk**			4 Safety Objectives/Measures	5 Implementation		6 Effectiveness	
		Low	Medium	High		By when	Who	Effective/ Date	Who

* Please specify what applies in the respective case.
** Assessment of the risk with the attached matrix.
The form can be downloaded at downloadcenter.bgrci.de

This form can be downloaded (DIN A4 size) at downloadcenter.bgrci.de

Appendix 2: Example of a Worksheet for Employee Surveys

Employee Survey

Determination of risks and stresses as part of the risk assessment

☐ Production _____
☐ Warehouse _____
☐ Office _____
☐ Workshop _____
☐ Laboratory _____
☐ Maintenance _____
☐ Other working areas
_____

Please identify up to ten activities, tools, work tools, machines and/or materials in your working area that, in your personal opinion, are hazardous to you or others.

Rank the most hazardous activity as number 1, the least hazardous one as number 10.

Your Ranking	Hazardous Activities, Tools, Machines, Work Equipment, Materials

Please check off:

You are an Employee ☐ Superior ☐

Assessment:
Further information about hazardous activities in the operation may be added to the table in the course of the assessment (Results of accident assessments, first aid log entries, expert knowledge etc.).

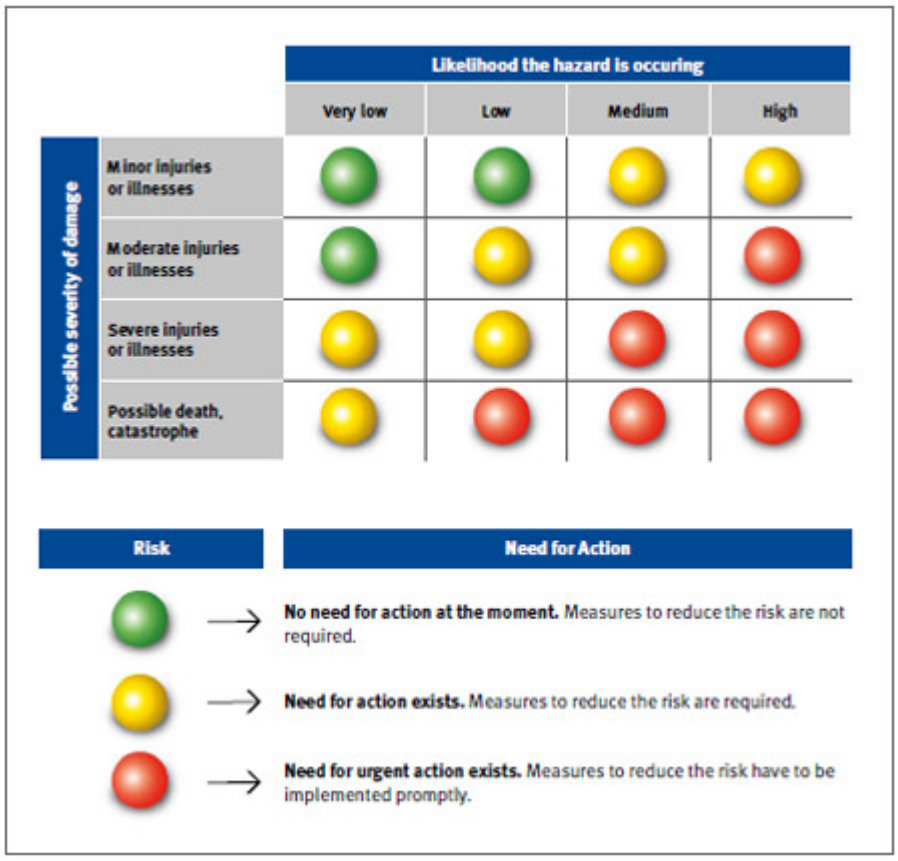
This form (DIN A 4 size) can be downloaded at downloadcenter.bgrci.de

Appendix 3: Risk Matrix

The risk evaluation of individual hazards and stresses may be carried out e. g. with the help of the matrix according to Nohl[19]. Dependent on the result safeguard measures have to be determined.

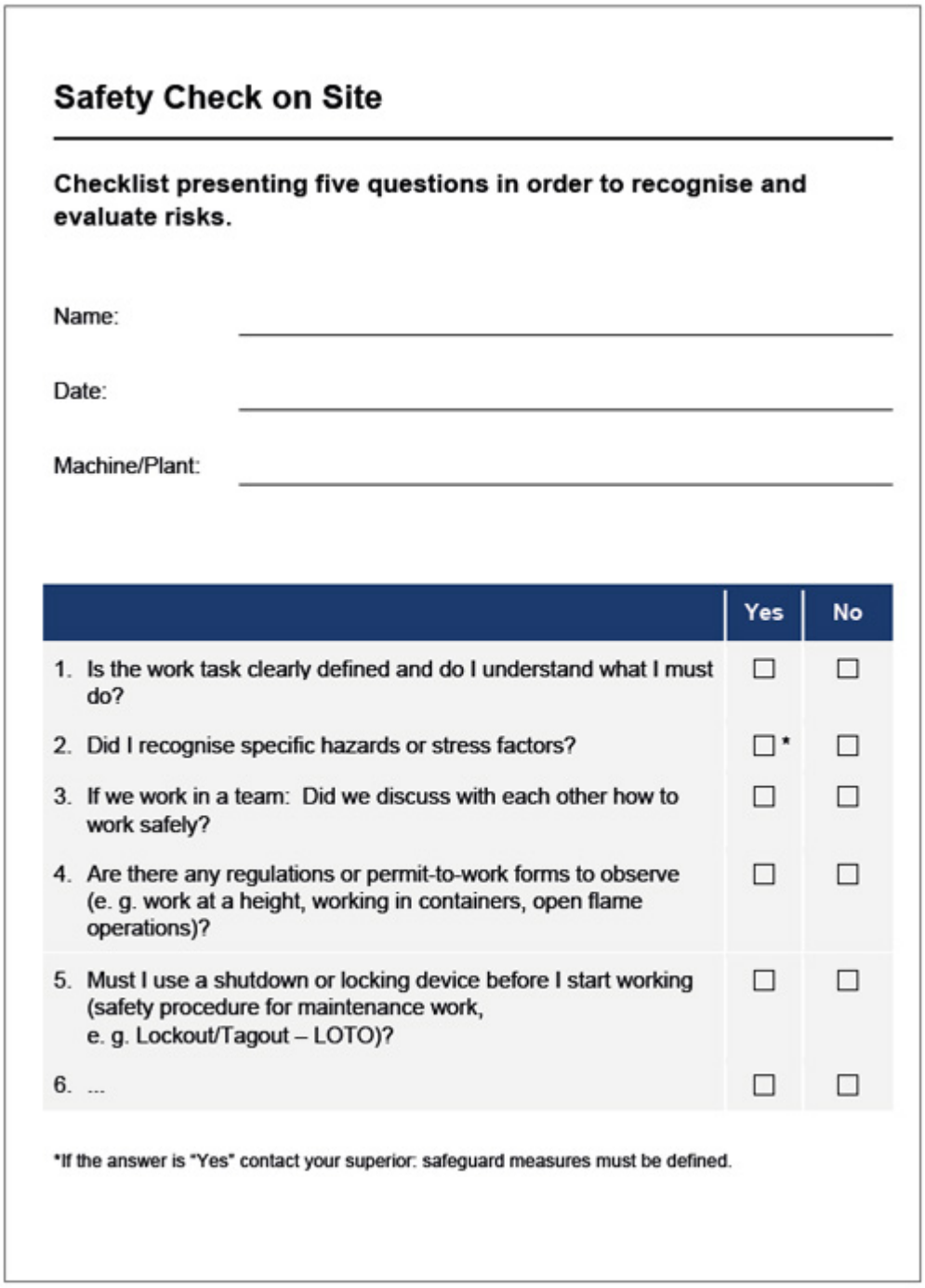
Evaluation Matrix

Figure 6: Risk Assessment according to Nohl



19 There are numerous risk assessment methods available in addition to the risk matrix according to Nohl.

Appendix 4: Safety Check on Site



Safety Check on Site

Checklist presenting five questions in order to recognise and evaluate risks.

Name: _____

Date: _____

Machine/Plant: _____

	Yes	No
1. Is the work task clearly defined and do I understand what I must do?	☐	☐
2. Did I recognise specific hazards or stress factors?	☐ *	☐
3. If we work in a team: Did we discuss with each other how to work safely?	☐	☐
4. Are there any regulations or permit-to-work forms to observe (e. g. work at a height, working in containers, open flame operations)?	☐	☐
5. Must I use a shutdown or locking device before I start working (safety procedure for maintenance work, e. g. Lockout/Tagout – LOTO)?	☐	☐
6. ...	☐	☐

*If the answer is "Yes" contact your superior: safeguard measures must be defined.

This form can be downloaded (DIN A 4 size) at downloadcenter.bgrci.de

Appendix 5: Bibliography

Laws, ordinances, and legal text of the Accident Prevention Regulations are **binding legal norms**. Deviations require permission of the competent authority or the competent Accident Insurance Institution respectively (e. g. German Social Accident Insurance Institution). Issuing a special dispensation requires compensation measures at the same safety level at least.

It is allowed to deviate from Technical Rules affiliated to ordinances, execution instructions of Accident Prevention Regulations (DGUV Regulations) and DGUV Rules if the risk assessment records that the same safety level is achieved in a different way.

DGUV Informations, Codes of Practice, and DIN-/VDE-Standards are **not binding legal norms**. These are regarded as important standards of evaluation and rules of technology that do not need to be complied with if the same safety level can be obtained otherwise.

Sources of information in the Internet
Publications of the German Social Accident Insurance Institution for the Raw Materials and Chemical Industry (Berufsgenossenschaft Rohstoffe und chemische Industrie – BG RCI) as well as a broad part of occupational safety and health regulations issued by the German government and the German Social Accident Insurance Institutions (ca. 1700 files, nearly all in German) can be found in the “Compendium for Occupational Safety and Health“ of BG RCI (“Kompendium Arbeitsschutz“). The use is not free of charge. A free limited trial is available. For further information see www.kompendium-as.de.

The homepage of BG RCI at www.bgrci.de/praevention and the “Fachwissenportal“ (portal for expert knowledge) at fachwissen.bgrci.de offer a huge number of current information.

Detailed information about publications and media of BG RCI and mail order: medienshop.bgrci.de

The download centre of BG RCI offers numerous Codes of Practice, attachments and forms from Codes of Practice and DGUV Rules as well as guidance documents: downloadcenter.bgrci.de.

Accident Prevention Regulations (Unfallverhütungsvorschriften), DGUV Rules (DGUV Regeln), DGUV Principles (DGUV Grundsätze) and many DGUV Informative Publications (DGUV Informationen) are available at the homepage of the German Social Accident Insurance (Deutsche Gesetzliche Unfallversicherung – DGUV): publikationen.dguv.de

1. Laws, Regulations, Technical Rules

Supply Source: Bookshops
Free download at www.gesetze-im-internet.de (Laws and Regulations) and/or www.baua.de (Technical Rules)

(1) Bergverordnung für alle bergbaulichen Bereiche (Allgemeine Bundesbergverordnung – ABBergV)

(2) Act on the Implementation of Measures of Occupational Safety and Health to Encourage Improvements in the Safety and Health Protection of Workers at Work (Arbeitsschutzgesetz – ArbSchG)

(3) Ordinance on Workplaces (Arbeitsstättenverordnung – ArbStättV), including Technische Regeln für Arbeitsstätten (ASR), particularly

(3a) ASR V3: Gefährdungsbeurteilung

(4) Act on Occupational Physicians, Safety Engineers and Other Occupational Safety Specialists (Gesetz über Betriebsärzte, Sicherheitsingenieure und andere Fachkräfte für Arbeitssicherheit – ASiG)

(5) Verordnung über Sicherheit und Gesundheitsschutz bei der Verwendung von Arbeitsmitteln (Betriebssicherheitsverordnung – BetrSichV)[20] mit Technischen Regeln für Betriebssicherheit (TRBS)[21], particularly:

(6) TRBS 1111: Gefährdungsbeurteilung

(7) TRBS 1112: Instandhaltung

(8) TRBS 1201: Prüfungen und Kontrollen von Arbeitsmitteln und überwachungsbedürftigen Anlagen

(9) TRBS 2111: Mechanische Gefährdungen – Allgemeine Anforderungen

(10) TRBS 2111 Teil 1: Mechanische Gefährdungen – Maßnahmen zum Schutz vor Gefährdungen beim Verwenden von mobilen Arbeitsmitteln

(11) Ordinance on Safety and Health Protection at Workplaces Involving Biological Agents (Biostoffverordnung – BioStoffV)

(12) Verordnung zum Schutz vor Gefahrstoffen (Gefahrstoffverordnung – GefStoffV) mit Technischen Regeln für Gefahrstoffe (TRGS)[21], particularly:

(13) TRGS 400: Risk Assessment for Activities Involving Hazardous Substances

(14) TRGS 500: Schutzmaßnahmen

(15) TRGS 555: Working Instruction and Information for Workers

(16) TRGS 600: Substitution

(17) Verordnung zum Schutz der Beschäftigten vor Gefährdungen durch Lärm und Vibrationen (Lärm- und Vibrations-Arbeitsschutzverordnung – LärmVibrationsArbSchV)

(18) Ordinance on Health and Safety Requirements for the Manual Handling of Loads at Work (Lastenhandhabungsverordnung – LasthandhabV)

2. Accident Prevention Regulations (DGUV Regulations), DGUV Rules, DGUV Principles, DGUV Informations, Codes of Practice and other publications of the German Social Accident Insurance Institutions

Supply Source: Deutsche Gesetzliche Unfallversicherung e. V., Glinkastraße 40, 10117 Berlin, www.dguv.de
Free download at publikationen.dguv.de

20 Leitlinien zur Betriebssicherheitsverordnung (LV 35) des Länderausschusses für Arbeitsschutz und Sicherheitstechnik (LASI) at http://lasi-info.com/publikationen/lasi-veroeffentlichungen/.

21 Announcement of BMAS from 15.06.2015 on application of TRBS and/or TRGS with entry into force of the new version of the Ordinance on Industrial Safety and Health (BetrSichV) and subsequent amendments of the Ordinance on Hazardous Substances (GefStoffV) (BMAS IIIb3): “A new version of the Ordinance on Industrial Safety and Health and subsequent amendments of the Ordinance on Hazardous Substances have become effective on 01.06.2015. [...] The previous TRGS may be used in future as a support for interpretation and application of the modified ordinances. However, it should be noted that Technical Rules, which are not revised yet, must not contradict this Ordinance. In these cases the respective determinations are to regard as irrelevant.“

(19) DGUV Regel 112-189: Benutzung von Schutzkleidung

(20) DGUV Regel 112-190: Benutzung von Atemschutzgeräten

(21) DGUV Regel 112-191: Benutzung von Fuß- und Knieschutz

(22) DGUV Regel 112-192: Benutzung von Augen- und Gesichtsschutz

(23) DGUV Regel 112-193: Benutzung von Kopfschutz

(24) DGUV Regel 112-194: Benutzung von Gehörschutz

(25) DGUV Regel 112-195: Benutzung von Schutzhandschuhen

(26) DGUV Regel 112-198: Benutzung von persönlichen Schutzausrüstungen gegen Absturz

(27) DGUV Regel 112-199: Benutzung von persönlichen Absturzschutzausrüstungen zum Retten

(28) DGUV Regel 112-201: Benutzung von persönlichen Schutzausrüstungen gegen Ertrinken

(29) DGUV Regel 112-202: Benutzung von Stechschutzkleidung, Stechschutzhandschuhen und Armschützern

(30) DGUV Grundsatz 311-003: Erstellen von Handlungshilfen zur Gefährdungsbeurteilung

Supply Sources: Berufsgenossenschaft Rohstoffe und chemische Industrie, Postfach 10 14 80, 69004 Heidelberg, mediensshop.bgrci.de or Jedermann-Verlag GmbH, Postfach 10 31 40, 69021 Heidelberg, www.jedermann.de, verkauf@jedermann.de
Member companies of BG RCI may obtain the papers listed free of charge (until the next source is cited), as long as the quantity is appropriate to the size of company.

(31) DGUV Regulation 1: Principles of prevention

(32) DGUV Vorschrift 2: Occupational physicians and OSH professionals

(33) DGUV Vorschrift 3: Electrical installations and equipment

(34) DGUV Regel 113-009: Herstellen von Reinigungs- und Pflegemitteln, **incl. hazard catalogue**

(35) DGUV Regel 113-010: Sicheres Arbeiten in der Gummiindustrie, **incl. hazard catalogue**

(36) DGUV Regel 113-011: Sicheres Arbeiten in der Kunststoffindustrie, **incl. hazard catalogue**

(37) DGUV Information 213-083: Sicheres Arbeiten in der pharmazeutischen Industrie, **incl. hazard catalogue**

(38) DGUV Information 213-851: Working Safely in Laboratories

Supply Sources: Berufsgenossenschaft Rohstoffe und chemische Industrie, Postfach 10 14 80, 69004 Heidelberg, medienshop.bgrci.de or Jedermann-Verlag GmbH, Postfach 10 31 40, 69021 Heidelberg, www.jedermann.de, verkauf@jedermann.de

Member companies of BG RCI may obtain the papers listed free of charge (until the next source is cited), as long as the quantity is appropriate to the size of company.

(39) Merkblatt A 006: Verantwortung im Arbeitsschutz – Rechtspflichten, Rechtsfolgen, Rechtsgrundlagen – KOMPAKT

(40) Merkblatt A 010: Betriebsanweisungen für Tätigkeiten mit Gefahrstoffen (DGUV Information 213-051)

(41) Merkblatt A 012: Mehr Sicherheit durch Kommunikation

(42) Merkblatt A 016: Gefährdungsbeurteilung, Sieben Schritte zum Ziel

(43) Merkblatt A 017: Gefährdungsbeurteilung – Gefährdungskatalog

(43a) Code of Practice A 017e: Risk Assessment – Hazard Catalogue

(43b) Merkblatt A 017-1: Verantwortung der Führungskräfte im Arbeitsschutz – Gefährdungsorientierte Schlüsselfragen zum Merkblatt A 017

(43c) Code of Practice A 017-1e: Responsibility of Managers with regard to Occupational Safety – Hazard-Orientated Key Issues related to Code of Practice A 017e

(43d) Merkblatt A 019: Psychische Belastung erkennen – gesunde Arbeitsbedingungen gestalten, Psychische Belastung in der Gefährdungsbeurteilung

(44) Merkblatt A 020: Außendienst,
incl. hazard catalogue

(44a) Code of Practice A 020e: Field Sales Force

(45) Merkblatt A 021: Auf Nummer sicher gehen! Stolpern, Rutschen und Stürzen vermeiden,
incl. hazard catalogue

(46) Merkblatt A 026: Gefährdungsorientiertes Unterweisen – Medien- und Gestaltungsvorschläge nach Gefährdungsfaktoren

(47) Merkblatt A 027: Mutterschutz im Betrieb, **incl. hazard catalogue**

(48) Merkblatt M 053: Arbeitsschutzmaßnahmen bei Tätigkeiten mit Gefahrstoffen (DGUV Information 213-080)

(49) Merkblatt T 009: Sicheres Betreiben von Spritzgießmaschinen, **incl. hazard catalogue**

(50) Merkblatt T 015: Befüllen und Entleeren von Transporttanks für Flüssigkeiten – Eisenbahnkesselwagen, Tankfahrzeuge, Tankcontainer und Aufsetztanks

(51) Merkblatt T 025: Umfüllen von Flüssigkeiten – Vom Kleingebinde bis zum Container,
incl. hazard catalogue

(52) Merkblatt T 026: Probenahme – Flüssigkeiten,
incl. hazard catalogue

(53) Merkblatt T 034: Gefährdungsbeurteilung im Labor, **incl. hazard catalogue** (DGUV Information 213-855)

(54) Merkblatt T 037: Warmlagerung von Bitumen,
incl. hazard catalogue

(55) Merkblatt T 040: Probenahme – Feststoffe,
incl. hazard catalogue

(56) Merkblatt T 044: Bildschirmarbeitsplätze, **incl. hazard catalogue**
Supplement: Checklist CHL 002 for Display Workstations

(57) Merkblatt K 001: Gefährdungsbeurteilung für Kleinbetriebe – Allgemeiner Teil

(58) Merkblatt K 002: Gefährdungsbeurteilung für Kleinbetriebe – Dekoration und innenliegender Sonnenschutz

(59) Merkblatt K 003: Gefährdungsbeurteilung für Kleinbetriebe – Sonnenschutz im Freien

(60) Merkblatt K 004: Gefährdungsbeurteilung für Kleinbetriebe – Bodenlegen

(61) Merkblatt K 005: Gefährdungsbeurteilung für Kleinbetriebe – Ausbau Wand und Decke

(62) Merkblatt K 006: Gefährdungsbeurteilung für Kleinbetriebe – Polsterei

(63) Merkblatt K 007: Gefährdungsbeurteilung für Kleinbetriebe – Reitsportsattlerei

(64) Merkblatt K 008: Gefährdungsbeurteilung für Kleinbetriebe – Fahrzeugsattlerei

(65) Merkblatt K 009: Gefährdungsbeurteilung für Kleinbetriebe – Feintäschnerei

(66) Merkblatt K 010: Gefährdungsbeurteilung für Kleinbetriebe – Gerbereien

(66a) Merkblatt K 013: Gefährdungsbeurteilung für Kleinbetriebe – Kies und Sand

(67) kurz&bündig KB 020: Ein Weg zur Gefährdungsbeurteilung

(68) Ordner Gefährdungsbeurteilung – Arbeitshilfen

(69) Praxishandbuch Arbeitssicherheit und Gesundheitsschutz in der Baustoffindustrie

(70) Praxishilfe-Ordner: Arbeitsschutz mit System

(71) Praxishilfe-Ordner: Gerüstet für den Notfall

(72) Praxishilfe-Ordner: Gesund im Betrieb

(73) Praxishilfe-Ordner: Sicherheit auf allen Wegen

Supply Sources: Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA), Friedrich-Henkel-Weg 1–25, 44149 Dortmund, www.baua.de

(74) Bundesanstalt für Arbeitsschutz und Arbeitsmedizin „Handbuch Gefährdungsbeurteilung“
Free download at www.baua.de/DE/Angebote/Publikationen/Fachbuecher/Gefaehrdungsbeurteilung.html

Supply Source: Geschäftsstelle der Nationalen Arbeitsschutzkonferenz, c/o Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA), Nöldnerstraße 40–42, 10317 Berlin

(75) Leitlinie „Gefährdungsbeurteilung und Dokumentation“ der Gemeinsamen Deutschen Arbeitsschutzstrategie (GDA)
Free download at https://www.gda-portal.de/DE/Aufsichtshandeln/Gefaehrdungsbeurteilung/Gefaehrdungsbeurteilung_node.html

(76) LASI Leitfaden „Handlungsanleitung zur Überprüfung der Gefährdungsbeurteilung“ (LV 59)

3. Other Publications and Media

Supply Source: Berufsgenossenschaft Rohstoffe und chemische Industrie, Postfach 10 14 80, 69004 Heidelberg, mediensshop.bgrci.de or Jedermann-Verlag GmbH, Postfach 10 31 40, 69021 Heidelberg, www.jedermann.de, verkauf@jedermann.de

(77) Kompendium Arbeitsschutz (download version or online database; fee required for both): Rules and regulations, symbol library, software for implementation and documentation of risk assessments (GefDok Pro demo version, GefDok KMU and GefDok light). Information and a temporary test access (free of charge) at www.kompendium-as.de

(78) CD 719 Baukasten Gefährdungsbeurteilung – Natursteinindustrie

(79) CD 721 Baukasten Gefährdungsbeurteilung – Recycling

(80) CD 724 Baukasten Gefährdungsbeurteilung – Betonfertigteile

(81) CD 725 Baukasten Gefährdungsbeurteilung – Betonsteinindustrie

(82) CD 726 Baukasten Gefährdungsbeurteilung – Transportbeton/Betonpumpen

(83) CD 727 Baukasten Gefährdungsbeurteilung – Kunststoffindustrie

(84) CD 728 Baukasten Gefährdungsbeurteilung – Kleinbaustellen

(85) CD 729 Baukasten Gefährdungsbeurteilung – Natursteinbearbeitung

(86) CD 730 Baukasten Gefährdungsbeurteilung – Betonrohre

Supply Source: Berufsgenossenschaft Rohstoffe und chemische Industrie, Postfach 10 14 80, 69004 Heidelberg
Free download of files at downloadcenter.bgrci.de

(87) GefDok light for fast documentation of risk assessments (layout templates as Excel Files available)

(88) GefDok KMU, an easy-to-use software for documentation of risk assessments for small and medium-sized enterprises (KMU) of different branches

4. Databases

(89) **GESTIS-Stoffdatenbank (GESTIS database on substances)** of DGUV at www.dguv.de/ifa/stoffdatenbank providing information on safe handling of hazardous substances und other chemical substances at work. The database informs about important physico-chemical data and specific rules regarding individual substances, particularly for classification and labelling according to GHS in compliance with CLP Regulation. Data for ca. 9.400 substances are available.

(90) **GESTIS-Biostoffdatenbank (GESTIS database on biological agents)** of DGUV at www.dguv.de/ifa/gestis-biostoffe providing information on safe activities with biological agents at work. The database informs about important properties of individual biological agents and comprises details for more than 10.000 biological agents. Information about activities in different branches, where biological agents may occur, is available in specific activity data sheets.

(91) **Gefahrstoffinformationssystem Chemikalien GisChem (GisChem Information system on hazardous chemical substances)** at www.gischem.de of the German Social Accident Insurance Institution for the Raw Materials and Chemical Industry (BG RCI) and the German Social Accident Insurance Institution for the Woodworking and Metalworking Industries (BGHM). Including different modules, e. g. „GisChem-Interaktiv“ to create individual operating instructions and documentation of the risk assessment hazardous substances in accordance with TRGS 400, „Gefahrstoffverzeichnis“ (“register of hazardous substances“) or „Gemischrechner“ (“mixture calculator“) for the classification of mixtures according to CLP Regulation. GisChem assists especially small and medium enterprises with the safe handling of hazardous substances and hazardous substance management.

(92) **Portal www.gefaehrdungsbeurteilung.de** of the Federal Institute for Occupational Safety and Health (BAuA) was developed in close coordination with responsible authorities of “Joint German Occupational Safety and Health Strategy“ (GDA). It comprises basic knowledge about risk assessments, guidance documents for the implementation of risk assessments, expert knowledge about all relevant risk factors as well as additional helpful information and offers around the issue risk assessment.

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If so, please contact:

- Berufsgenossenschaft Rohstoffe und chemische Industrie,
  Prävention, Grundsatzfragen und Information, Medien
  Postfach 10 14 80, 69004 Heidelberg
- E-Mail: medien@bgrci.de
- Contact form: www.bgrci.de/kontakt-schriften

