GOVERNMENT NOTICES • GOEWERMENTSKENNISGEWINGS

DEPARTMENT OF EMPLOYMENT AND LABOUR

NO. R. 4598 **5 April 2024**

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO. 85 OF 1993)

DRAFT REGULATIONS FOR HAZARDOUS CHEMICAL AGENTS

I, Thembelani W Nxesi, Minister of Employment and Labour hereby give notice that I intend, in terms of section 43 of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), and after consultation with the Advisory Council for Occupational Health and Safety, to made regulations in the Schedule.

Interested persons who wish to comment on the draft regulations are invited to do so in writing within 90 days from the date of publication of this notice, in the prescribed format. All representations and comments must be sent to the Director-General of the Department of Employment and Labour.

By hand: The Department of Employment and Labour – attention: E Lourens
Laboria House, 215 Francis Baard Street
Pretoria, CBD

By post: The Director General
The Department of Employment and Labour – attention: E Lourens
Private Bag X117, Pretoria 0001.

By email: DraftComments.OHH@labour.gov.za

MR TW NXESI, MP
MINISTER OF EMPLOYMENT AND LABOUR
DATE: 23/01/2024

Kindly provide inputs, corrections and / or comments in writing on the proposed Draft Regulations in the following format.

Name and Surname:					E-Mail:					Phone number:	
Company name (where applicable)											
Government		Industry		Union		Consultancy		Private		Other	
1	Regulation and/or Sub regulation from draft, referring to		Comment/Input/Correction/Proposal Plus Motivation								
Will the proposal have an impact on any other regulation? If so, which regulation and what will be the impact?											
2	Regulation and/or Sub regulation from draft, referring to		Comment/Input/Correction/Proposal Plus Motivation								
Will the proposal have an impact on any other regulation? If so, which regulation and what will the impact be?											
3	Regulation and/or Sub regulation from draft, referring to		Comment/Input/Correction/Proposal Plus Motivation								
Will the proposal have an impact on any other regulation? If so, which regulation and what will the impact be?											
General Comments:											

Signature:_____

Date:_____

Provide inputs to the Department of Employment and Labour by e-mailing this completed document to: DraftComments.OHH@labour.gov.za

Draft Regulations For Hazardous Chemical Agents

CONTENT

1. Definitions-

In these regulations any word or expression to which a meaning has been assigned in the Act must have the meaning so assigned and, unless the context otherwise indicates –

"air monitoring" means the measurement of employee exposure to airborne hazardous chemical agents, for comparison against occupational exposure limits;

"Asbestos Abatement Regulations" means the Asbestos Abatement Regulations published by Government Gazette No. R.11196 of 10 November 2020 as amended under section 43(1) of the Act;

"assessment" means a programme to determine any risk from exposure to a hazardous chemical agent associated with any hazard thereof at the workplace, in order to identify the steps needed to be taken to remove, reduce or control such hazard;

"BEI" or "biological exposure index" is a reference value for assessing biological monitoring results, intended as a guideline for the likelihood of adverse health effects and generally represents the level of determinants that are most likely to be observed in specimens collected from healthy employees who have been exposed to chemicals with inhalation exposure at the Occupational Exposure Limit, as listed in Table 4 of Annexure 2 hereby as revised from time to time and listed in the Government Gazette;

"CAS number" or "chemical identity" means the number or name respectively, that will uniquely identify a chemical, given in accordance with the nomenclature systems of the International Union of Pure and Applied Chemistry or the Chemical Abstracts Service, or a technical name;

"carcinogen" or "carc" means any agent or mixture which induces cancer or increases its incidence, classified by GHS as-

(a) Category 1: known or presumed human carcinogens;
(b) Category 2: suspected human carcinogens;

"CE marking" means the marking on RPE that indicates "Conformite Europeenne" certifies that a product has met European Union health, safety, and environmental requirements;

"chemical agent" means a GHS aligned agent, substance or mixture;

"chief director, provincial operations" means the chief director, provincial operations as defined in the General Administrative Regulations;

"competent person" means a person in relation to this regulation, who: has, in respect of the work or task to be performed, the required knowledge, training and experience and, where applicable, qualifications specifically including appropriate content on chemical agents or related tasks: Provided that, where appropriate qualifications and training are registered in terms of the National Qualifications Framework Act, 2008 (Act No. 67 of 2008), those qualifications and that training must be regarded as the required qualifications and training; and is familiar with the Act and the regulations, made under the Act, applicable to the scope of work performed;

"**compressed air**" means air that is delivered via a compressor, to a pressure greater than atmospheric pressure;

"consumer product" means a product containing an HCA that is-

(a) packed or repacked primarily for use by a household consumer or for use in an office;
(b) a packed or repacked product, primarily for use by a household consumer, is packed in the way and quantity in which it is intended to be used by a household consumer; and
(c) a packed or repacked product, primarily for use in an office, is packed in the way and quantity in which it is intended to be used for office work;

"container" means in relation to an HCA, anything in or by which an HCA is, or has been, wholly or partly covered, enclosed or packed, including anything necessary for the container to perform its function as a container;

"engineering control measures" means physical changes in process equipment or the installation of auxiliary equipment directed at enclosing, blocking, reducing or capturing emissions with the aim of controlling exposures;

"exposed" means contact through any route of entry whilst at the workplace to a hazardous chemical agent, quantified as the amount of chemical available at the exchange boundaries of the employee and available for absorption and includes potential, accidental or possible, exposure;

"exposure monitoring" means both air monitoring and biological monitoring;

"GHS classification" means the GHS hazard classes and hazard categories assigned to a hazardous chemical agent;

"hazard category" means a division of criteria within a hazard class in the GHS, where these categories compare hazard severity within a hazard class and should not be taken as a comparison of hazard categories more generally;

"hazard class" means the nature of a physical, health or environmental hazard under the GHS;

"hazard pictogram" means a graphical composition, including a symbol plus other graphical elements, such as a boarder, background pattern or colour that is intended to convey specific information, that is assigned in the GHS to a hazard class or hazard category;

"hazard statement" means a statement assigned in the GHS to a hazard class or hazard category describing the nature of the hazards of a hazardous chemical including, if appropriate, the degree of hazard;

"hazardous chemical agent" or **"HCA"** means a GHS aligned chemical agent as provided in Annexure 1;

"importer" means an employer or self-employed person who imports an HCA into the republic by any means, that is to be used, or could reasonably be expected to be used at a workplace;

"intake" includes inhalation, ingestion or absorption through the skin or mucous membranes, "routes of intake" has a corresponding meaning;

"in transit" means in relation to an HCA that-
(a) is supplied to, or stored at, a workplace in containers that are not opened at the workplace; and
(b) is not used at the workplace;

"Lead Regulations" means the Lead Regulations published under Section 43 of the Act;

"manufacturer" means an employer or self-employed person manufacturing an HCA that is to be used, or could reasonably be expected to be used, at a workplace;

"medical certificate of fitness" means a written statement issued by an occupational health practitioner, or in prescribed cases by an occupational medicine practitioner, in which the practitioner certifies an employee's medical fitness to perform a particular job function, after consideration of the inherent requirements of the job and the hazards to which the employee may be exposed;

"medical screening" means the systematic application of a test or inquiry to identify individuals at sufficient risk of a specific disorder because of exposures in the workplace, identifying potential health effects before the employee exhibits any symptoms, to benefit from further investigation or direct preventive action;

"monitoring" means the planning, carrying out and recording of the results of a measurement programme;

"NIOSH marking" means a marking on RPE that indicates National Institute for Occupational Safety and Health (NIOSH) approval;

"OEL" or "occupational exposure limit" means a limit value set by the Minister, which represents the airborne concentration for an HCA and where the exposure standard can be of three forms-

(a) 8-hour Time-weighted Average;
(b) ceiling limit; and
(c) short term exposure limit.

"OEL ceiling limit" or "ceiling limit" or "C" means a maximum or peak airborne concentration of an HCA determined over the shortest analytically practicable period of time which does not exceed 15 minutes;

"OEL-ML" or "occupational exposure limit-maximum limit" means an occupational exposure limit, as listed in Table 2 of Annexure 2;

"OEL-RL" or "occupational exposure limit-recommended restricted limit" means an HCA as listed in Table 3 of Annexure 2;

"OEL-Short Term Exposure Limit" or "STEL" means the time-weighted average maximum airborne concentration of an HCA calculated over a fifteen-minute period;

"OEL 8-hour Time-weighted average" or "TWA" means the maximum average airborne concentration of an HCA when calculated over an eight-hour working day, for a five-day working week;

"ototoxic chemical agents" means chemical agents that can cause hearing impairment alone or in combination with noise, even below 85dBA;

"personal protective equipment" means in relation to HCA's, specialised clothing or equipment, including respiratory protective equipment, conforming to a standard which will adequately protect the health of a person when used or worn for reducing exposure, as contemplated in the General Safety Regulations;

"prohibited agent" means a hazardous chemical agent prohibited by the Minister and listed in Table 1 of Annexure 2, where the agents prohibited may be revised from time to time, by notice in the Government Gazette;

"precautionary statement" means a phrase prescribed by the GHS that describes recommended measures that should be taken to minimise or prevent-

(a) adverse effects resulting from exposure to an HCA; or
(b) improper storage or handling of an HCA;

"reasonably" means in a sensible and practical way;

"reasonably control or reasonably controlled" with respect to an HCA, means -

(a) considering and reducing the likelihood of exposure to the hazard with reference to duration and concentration of exposure;
(b) applying available knowledge of the health effects of exposure concerning that hazard with reference to the OEL, and of any means of removing or mitigating exposures related to the hazard;
(c) applying available and suitable of controls, to remove or mitigate that hazard or risk, aligned to the hierarchy of controls;
(d) considering the cost of implementing controls, to remove or mitigate that hazard or risk, relative to the anticipated reduction in exposure risk.

"respirator zone" means an area where a respirator is used during normal operations, in which the concentration of an airborne HCA exceeds the OEL-RL or OEL ML for that HCA;

"retailer" means an employer or self-employed person who supplies consumer products, containing an HCA, to members of the public, who are not primarily engaged in the further supply of those products;

"respiratory protective equipment or respirator" means a type of personal protective equipment, which is a device used as a form of control, including respirators which filter the air to remove harmful HCAs, as well as breathing apparatus which supply clean air for the employee to breathe and-

(a) conforms to the technical requirements necessary to obtain CE or NIOSH marking, and
(b) have fulfilled the requirements of the SANS 10338 Homologation of Respiratory Equipment;

"SDS" or "Safety Data Sheet" means a document aligned to GHS, that provides information on the hazard classification, properties of hazardous chemicals and procedures for handling or working with hazardous chemicals in a safe manner and how they affect the health and safety in the workplace;

"SEG" or "Similar Exposure Group" means one or more employees having the same general exposure profile, because of the similarity and frequency of the tasks performed, the materials and processes with which they work, the controls in place as well as the similarity of the way they perform tasks;

"sensitizer including: DSEN and RSEN" means a HCA that causes a substantial proportion of exposed people to develop an allergic reaction in normal tissue after repeated exposure, which includes Dermal Sensitizer (DSEN), Respiratory Sensitizer (RSEN);

"shutdown maintenance" means a planned down period for a plant or machinery for scheduled or emergency maintenance for an extended period of time;

"signal word" means the word "danger" or "warning" used on a GHS aligned label, to indicate to the reader of a potential hazard as well as the relative severity level of a hazard;

"skin" means that the HCA might be absorbed in toxicologically significant amounts through direct contact with skin, or mucous membranes and eyes, from airborne exposure to gases, vapours, or liquids, where conclusions about exposures and health effects, based solely on airborne concentrations may be incomplete;

"supplier" means an employer or self-employed person who conducts a business or undertaking of supplying any HCA, including supply to a retailer;

"temporary respirator zone" means an area where respiratory protective equipment must be used during abnormal operations for a limited time period, in which the concentration of an airborne HCA exceeds the OEL-RL or OEL ML for that HCA;

"the Act" means the Occupational Health and Safety Act, 1993 as amended (Act No.85 of 1993);

"UN IMO International Maritime Dangerous Goods Code" means the International Maritime Organisation, International Maritime Dangerous Goods (IMDG) Code, which was developed as an international code, as an agency of the United Nations, for the maritime transport of dangerous goods in packaged and bulk form, with particular reference to the segregation of incompatible substances, as may be updated from time to time;

"UN Globally Harmonized System" or "GHS" means the International Maritime Organisation, International Maritime Dangerous Goods (IMDG) Code, which was developed as an international code, as an agency of the United Nations, for the maritime transport of dangerous goods in packaged and bulk form, with particular reference to the segregation of incompatible substances, as may be updated from time to time;

"UN Number" means the HCA four figure identification number in the UN Transport of Dangerous Goods Model regulations, as may be updated from time to time;

"UN Proper Shipping Name" means the HCA name in the UN Transport of Dangerous Goods Model regulations, most accurately describing the goods, as may be updated from time to time;

"UN Transport of Dangerous Goods" means the UN Recommendations on the Transport of Dangerous Goods Model Regulations Volumes 1 and 2 and, which are guidance documents developed by the United Nations to harmonize dangerous goods transport regulations, as may be updated from time to time, commonly known as the UN Orange Book;

"vulnerable employee" means an employee who is at a higher risk of injury, disease or complications caused by exposure to an HCA;

2. Scope of application

(1) Subject to the provisions of subregulation (2), these regulations apply to-
   (a) an employer or a self-employed person who carries out work at a workplace which may expose any person to an HCA at the workplace; and
   (b) a manufacturer, importer, supplier or retailer of an HCA that is intended for use at a workplace;

(2) The provisions of regulations 14 and 17(1), do not apply to:
   (a) a self-employed person; or

(b) a person who visits a workplace as contemplated in subregulation (1).

(3) The provisions of these regulations do not apply in the case where the Lead Regulations or Asbestos Abatement Regulations, apply.

3. Classification of Hazardous Chemical Agents

(1) The manufacturer or importer of a chemical agent must, before it is supplied to a workplace-

(a) determine whether the chemical agent is an HCA by carrying out a hazard assessment referencing the building blocks provided in Annexure 1; and

(b) review the GHS classification, should a change in composition of the HCA be made.

(2) The classification and review of GHS classification contemplated in subregulation (1) must be carried out by a competent person.

4. Safety Data Sheet

(1) Subject to section 10(3)(b) of the Act and regulation 3, a safety data sheet for an HCA must be-

(a) prepared by an importer or, manufacturer before manufacture and if not reasonably practicable, immediately after manufacture but before import, provided that the safety data sheet is-

(i) GHS compliant;

(ii) developed by a competent person;

(iii) classified for the HCA, in accordance with regulation 3;

(iv) reviewed at least once every 5 years;

(v) amended whenever necessary to ensure that it contains correct and current information, aligned to its GHS classification required in regulation 3, which includes new data regarding the hazard presented by an HCA, that changes its classification in a category or subcategory of a hazard class, or results in its classification in another hazard class; and

(vi) given the most recent applicable date which, may be the date of first issue, review or amendment.

(b) provided by the manufacturer or importer to-

(i) a supplier of an HCA to a workplace; and

(ii) any person who is likely to be affected by an HCA;

(c) provided by the supplier of an HCA-

(i) when the HCA is first supplied to the workplace;

(ii) if the SDS for the HCA is amended; and

(iii) to any person at the workplace if they request the SDS;

(d) obtained by the employer from the manufacturer, importer or supplier of the HCA and provided to-

(i) any person who is involved in using, handling or likely to be exposed to the HCA at the workplace;

(ii) any person at the workplace who needs the information to assess risk related to health and safety;

(iii) any health practitioner who needs the information to treat a person who has been exposed to the HCA; or

(iv) an emergency service professional who requires the information to fulfil their duties as an emergency respondent.

(2) Subregulation (1) does not apply to a manufacturer or importer of an HCA who has not manufactured or imported the HCA in the past 5 years.

(3) The information in the GHS compliant safety data sheet should be presented using the following 16 headings in the order given below, as may be updated from time to time-

(a) 1: identification of the substance/mixture and of the company/undertaking;
(b) 2: hazards identification;
(c) 3: composition/information on ingredients;
(d) 4: first aid measures;
(e) 5: firefighting measures;
(f) 6: accidental release measure;
(g) 7: handling and storage;
(h) 8: exposure controls/personal protection;
(i) 9: physical and chemical properties;
(j) 10: stability and reactivity;
(k) 11: toxicological information;
(l) 12: ecological information;
(m) 13: disposal considerations;
(n) 14: transport information;
(o) 15: regulatory information; and
(p) 16: other information.

(4) With the exception of heading 16, no heading may be left blank, if specific information is not applicable or available this should be indicated.

(5) Under heading 8 any applicable OEL -ML or OEL –RL in Annexure 2 must be provided.

(6) Every page of an SDS must be numbered.

(7) The GHS product identifier must appear on each page of an SDS.

5. Labelling of Hazardous Chemical Agents

(1) With regard to labelling of an HCA-

(a) a manufacturer or importer of an HCA must ensure that the HCA is correctly labelled as soon as practicable after manufacturing or importing;
(b) a supplier of an HCA must not supply an HCA, if it is not correctly labelled;
(c) a retailer of an HCA must not supply consumer products containing HCAs, to be used in a workplace, if they are not correctly labelled; and
(d) an employer must-

(i) ensure that an HCA used, handled or stored at the workplace is correctly labelled;
(ii) ensure that a container labelled for a HCA is used only for the use, handling or storage of that HCA;
(iii) ensure that when an HCA is transferred or decanted at the workplace, from its original container into a destination container, the destination container is correctly labelled for that HCA; and
(iv) an HCA within pipework is identified by a label, sign or any other suitable manner, on or near the pipework, subject to:

(aa) where the product is a mixture of more than one HCA, the intermediate or finished product name may be used for identification;

(bb) sampling or loading points or any other termination point of a pipe where during normal operations employees may be exposed to an HCA, must be identified; and

(cc) pipework including the splitting of flanges, where employees may be exposed during routine maintenance activities, should be identified as far as is reasonably practicable.

(2) Subject to the provisions of subregulation (1) an HCA is correctly labelled, if the selection and use of label elements is in accordance with the GHS and is packed in a container that has a label-

(a) that includes-

(i) the product identifier;
(ii) here applicable the UN proper shipping name;
(iii) the chemical identity of all ingredients, contributing to the final GHS classification of the HCA;
(iv) the name, address, business and telephone number of the manufacturer; or the importer;
(v) an emergency telephone number;
(vi) applicable signal word;
(vii) hazard statement;
(viii) precautionary statement; and
(ix) hazard pictogram consistent with the GHS;

(b) which may include-

(i) the quantity of the HCA in the package, unless this quantity is specified elsewhere on the package;
(ii) the quantity of each HCA ingredient;
(iii) any information about the hazards, first aid and emergency procedures relevant to the HCA, not otherwise included in the hazard statement or precautionary statement;
(iv) first aid measures;
(v) classification of the HCA, made in accordance with regulation 3; and
(vi) an expiry date, where applicable.

6. Packaging of Hazardous Chemical Agents

(1) Packaging for an HCA must satisfy the relevant requirements of the UN Transport of Dangerous Goods, with respect to packaging and fastenings, or where applicable the UN IMO International Maritime Dangerous Goods Code, including the following requirements-

(a) The manufacturer or importer of an HCA must ensure that the HCA is correctly packed, as soon as reasonably practicable after manufacturing or importing, where correctly packed means-

(i) it is in sound condition;
(ii) durably and legibly marked;
(iii) will safely contain the chemical for the time the chemical is likely to be packed;
(iv) is made of material that is compatible with, and will not be adversely affected by the chemical;
(v) the packaging and fastenings are strong and solid throughout, to ensure that they will not loosen and will meet the normal stresses and strains of handling; and
(vi) it does not usually contain food or beverages and cannot be mistakenly identified as containing food or beverages.

(b) The employer or self-employed person must only receive, use, handle or store an HCA if it is correctly packed, as contemplated in subregulation (1).

(c) An employer or self-employed person must as far as reasonably practicable, ensure that a container or a vehicle in which an HCA is transported, is clearly identified and in compliance with the National Road Traffic Act, 1996 (Act No. 93 of 1996).

7. Disclosure of ingredient identity

(1) Where an ingredient in an HCA causes the correct classification of the chemical agent, in terms of regulation 3 to include a hazard class and hazard category referred to in-
   (a) Table 4 of Annexure 1, then the chemical identity of the ingredient detailed must be disclosed; or
   (b) Table 5 of Annexure 1, then the chemical identity of the ingredient may be disclosed by its generic name if-
      (i) the identity of the ingredient is commercially confidential;
      (ii) the ingredient does not cause the correct classification of the hazardous chemical to include any other hazard class and hazard category in Table 4 of Annexure 1; and;
      (iii) an OEL for the ingredient has not been established;
   (c) For all other cases not included in subregulation (1)(b), the ingredient must be disclosed by its chemical identity.

(2) Where an ingredient of an HCA must be disclosed in terms of subregulation (1)(a), the proportion of the ingredient to the hazardous chemical must be disclosed if-
   (a) the exact proportion of the ingredient is not commercially confidential, where the exact proportion of the chemical is expressed as a percentage by weight or volume; or
   (b) the exact proportion of the ingredient is commercially confidential in terms of the following ranges within which the exact proportion fits, expressed as a percentage by weight or volume-
      (i) <15%;
      (ii) 15 to 70%;
      (iii) >70%; or
      (iv) a range that is narrower than the ranges provided for in (i), (ii) or (iii).

8. **Disposal of Hazardous Chemical Agents**

(1) An employer must, as far as is reasonably practicable, ensure that all HCA waste is classified and disposed of as waste in terms of the following legislation, as updated from time to time-
   (a) National Environmental Management: Waste Act, 2008, (Act no 59 of 2008),
   (b) Waste classification and management regulations, 2013;
   (c) National norms and standards for the assessment of waste for landfill disposal, 2013; and
   (d) National norms and standards for disposal of waste to landfill, 2013;

(2) Ensure that all collectable HCA waste is placed into containers that will prevent the likelihood of exposure during handling.

(3) Ensure that all vehicles, re-usable containers and covers which have been in contact with HCA waste, are cleaned and decontaminated after use in such a way that the vehicles, containers or covers do not cause a hazard inside or outside the premises concerned.

(4) Ensure that all employees involved in the collection, transport and disposal of HCA waste, who may be exposed to that waste, are provided with suitable personal protective equipment.

(5) Ensure that if the services of a waste disposal contractor are used, a provision is incorporated into the contract stating that the contractor must also comply with the provisions of these regulations.

9. Inventory for Hazardous Chemical Agents

(1) An employer must ensure as far as reasonably practicable that-
  (a) an inventory of HCAs used, handled or stored at the workplace is prepared and kept at the workplace; and
  (b) the inventory is maintained to ensure the information is up to date.

(2) The inventory must include-
  (a) a list of HCAs used, handled or stored;
  (b) the current SDS for each HCA; and
  (c) the work area where the HCA is used.

(3) The employer must ensure that the inventory is readily accessible to-
  (a) an employee involved in using, handling or storing an HCA; and
  (b) anyone else who is likely to be affected by an HCA at the workplace.

(4) An inventory is not required if-
  (a) the HCA is in transit, in which case the employer must ensure that they are in possession of the dangerous goods transport information specified in the UN Transport of Dangerous Goods and a SDS for the HCA; or
  (b) the HCA is a consumer product where the employer is a retailer, or it is reasonably foreseeable that the consumer product will be used at the workplace only in-
    (i) quantities that are consistent with household use;
    (ii) a manner that is consistent with household use; and
    (iii) a manner that is incidental to the nature of the work carried out by an employee using the HCA.

10. Hazardous chemical agent risk assessment

(1) Where an HCA is present in the workplace the employer must cause a documented risk assessment of an HCA to be carried out -
  (a) immediately;
  (b) thereafter at intervals not exceeding 24 months;
  (c) by a competent person;
  (d) using the information gathered in subregulation (d)(i) and (ii), develop named SEGs for the workplace and assess HCA risk for each SEG; and
  (e) taking into account at least the following-
    (i) the scope of the risk assessment including work area, job and position classification, and inventory of tasks within a job;
    (ii) nature of task specific exposure, considering HCA exposure concentration;
    (iii) duration and frequency of the tasks;
    (iv) where available, implementation of recommendations contained in the previous assessment through a documented action plan;
    (v) where available, previous results of exposure monitoring in accordance with regulation 13;
    (vi) information provided by the manufacturer or importer or supplier of the HCA;
    (vii) the hazardous properties of the HCA, including the health class and categories, which are contained in any relevant SDS that is compliant with regulation 4;
    (viii) ototoxic chemical agents acting synergistically with noise to cause hearing loss;
    (ix) potential HCA exposure during confined space entry;

(x) additional information on health effects, including where available the OEL for that HCA;
(xi) the circumstances of the work, including the amount of the HCA involved;
(xii) the level, frequency and duration of exposure as well as route of intake;
(xiii) in circumstances where the work will involve exposure to more than one HCA, the risk presented by exposure to such HCA in combination;
(xiv) activities, such as preventative and breakdown maintenance, carried out during standard operating conditions;
(xv) the effectiveness of preventive and control measures which have been or will be taken in accordance with regulation 11, including the experience of employees regarding the effectiveness of controls;
(xvi) the steps recommended to be taken to control exposures, in accordance with regulation 11, aligned with the hierarchy of control;
(xvii) records of adverse medical surveillance outcomes, required by regulation 14(7), and where needed seek guidance from any Occupational Health Practitioner appointed by the employer;
(xviii) the differing effects of exposure to HCA to men, women, young employees and vulnerable employees, where such difference may exist;
(xix) where compressed air is used to clean surfaces;
(xx) such additional information as may be needed in order to complete the HCA risk assessment;
(xxi) where shutdown maintenance is conducted or an incident occurs.

(2) The employer must review the assessment required by subregulation (1) forthwith if-
(a) there has been a change in a process involving an HCA or in the methods, equipment or procedures in the use, handling, control or processing of the HCA;
(b) there is a change indicating that potential exposure is not reasonably controlled in terms of regulation 11;
(c) there is a failure or deterioration of a control measure in terms of regulation 12;
(d) an inspector is of the opinion that that the risk assessment does not adequately assess risk; or
(e) an incident occurred involving HCA.

(3) The employer must indicate appropriate controls in the HCA risk assessment, in terms of regulation 11, where there is a risk to health indicated by-
(a) the risk assessment conducted in terms of subregulation (1);
(b) the review conducted in terms of subregulation (2);
(c) the results of any exposure monitoring carried out in accordance with regulation 13;
(d) medical surveillance carried out in accordance with regulation 14;
(e) if after implementation of controls for the SEG, in terms of regulation 11, the review conducted in terms of subregulation (2) indicates potential exposure is likely to exceed 50% of the OEL;
(f) air monitoring alone is unlikely to reflect total uptake through all exposure pathways; or
(g) where the BEI is likely to be exceeded, then in terms of regulation 13(1) exposure monitoring must be conducted.

11. Prevention or Control of Exposure to HCA

(1) An employer must prevent the exposure to an HCA or, where this is not reasonably practicable, control of that exposure must only be considered as adequate if-
(a) for an HCA with a restricted limit, the OEL for the SEG is not exceeded and exposure is reasonably controlled;

(b) for an HCA with a maximum limit, exposure is reasonably controlled, and-

(i) the OEL for the SEG is not exceeded; or

(ii) if practicable elimination or substitution have been implemented in line with subregulations (2)(a) and (2)(b) respectively and;

(iii) engineering controls have been implemented in line with subregulation (2)(c), but have not reduced exposure to below the OEL, where additionally the employer may use administrative controls specified in subregulation (2)(d) or personal protective equipment controls as provided for in regulation 15.

(2) When determining whether exposure is reasonably controlled, the employer must apply control measures consistent with the risk assessment of HCA, or if applicable exposure monitoring of HCA carried out in terms regulation 13, in order of priority-

(a) elimination of the HCA or process in which it is used;

(b) substitution of the HCA with an HCA or process which, under the conditions of its use, either eliminates or reduces the risk to the health of employees;

(c) the design and use of engineering controls, including-

(i) the control of exposure at source;

(ii) enclosure of the process and handling systems;

(iii) isolation of the work to control the emission of HCA; and

(iv) modification of process parameters that minimise emissions with the intent of reducing exposure;

(d) the use of administrative controls including-

(i) arrangements for the safe handling, storage and transport of HCA, and waste containing such HCA, at the workplace;

(ii) a safe system or method of work, a process or a procedure including the adoption of suitable maintenance procedures, designed to minimise risk;

(iii) minimising the quantity of HCA at the workplace, which could result in exposure;

(iv) appropriate hygiene measures, including personal hygiene;

(v) information instruction and training;

(vi) reduction of the number of employees exposed; and

(vii) reduction of exposure duration.

(3) When developing control measures ensure that-

(a) all relevant routes of exposure are considered including inhalation, skin absorption and ingestion;

(b) the introduction of control measures does not increase the overall risk to health and safety;

(c) personal protective equipment must be provided in accordance with regulation 15; and

(d) subject to subregulation (1), where reasonably practicable a ventilation system provided to control the concentration of an airborne HCA, must be so designed, constructed and installed, that the concentration of the HCA does not exceed the OEL.

12. Use, maintenance, examination and testing of control measures

(1) Every employer or self-employed person who provides any control measure as contemplated in regulation 11, must ensure that-

(a) reasonable steps are taken to enforce the proper use and application;

(b) where relevant, is maintained in effective working order;

(c) it is maintained in a clean condition; and

(d) inspection, examination and testing of controls, is carried out at appropriate intervals.

(2) Where ventilation controls as a form of engineering control, are provided to meet the requirements of regulation 11, the employer must ensure that-

(a) ventilation controls are operated and maintained, to reasonably control exposure to OEL-RL and OEL-ML agents, subject to regulation 11(1);

(b) written instructions are established, which specify the nature and frequency of inspections, tests and maintenance to be performed on the ventilation system; and

(c) testing of the ventilation system is carried out at least once every 24 months by an approved inspection authority, who must record in writing whether performance of the ventilation plant conforms to an appropriate standard or guideline.

(3) The employer must review and as necessary revise a control measure, where it is indicated that an existing control measure does not achieve reasonable control as contemplated-

(a) in the assessment of HCA risk, provided for in regulation 10;

(b) in the results of exposure monitoring, provided for in regulation 13; and

(c) in the request for a review of a control by a health and safety representative or committee.

13. Exposure monitoring of HCA

(1) Based on the HCA risk assessment for an SEG carried out in accordance with regulation 10, the employer must ensure that exposure monitoring is conducted -

(a) for air monitoring for an HCA with an OEL ML or RL, at least every 24 months: Provided an inspector may direct an employer to conduct or re-conduct the exposure monitoring or part thereof;

(b) by an approved inspection authority;

(c) if the risk assessment indicates potential exposure is evaluated to exceed 50% of the OEL;

(d) by collecting a minimum of three personal air monitoring measurements for each SEG;

(e) for biological monitoring of an HCA with a BEI listed in table 4 of Annexure 2, when-

(i) air monitoring alone is not likely to reflect total uptake through all exposure pathways and the BEI is likely to be exceeded;

(ii) air monitoring results contemplated in subregulation (1)(a) exceed 50% of the OEL; or

(iii) recommended by an occupational medicine practitioner.

(2) The results of air monitoring carried out in terms of subregulation (1) must be used to determine-

(a) the need for controls, in terms of regulation 11;

(b) whether to conduct medical screening and surveillance, in terms of regulation 14; and

(c) validation of respirator protection factor selection, in terms of regulation 15.

(3) An employer must develop an action plan with appropriate corrective actions based on the recommendations in the risk assessment and exposure monitoring report.

(4) Enter the results of the exposure monitoring programme, contemplated in subregulation (1), into the record required by regulation 19.

(5) Based on the risk assessment for an SEG, every employer or self-employed person must ensure that exposure monitoring for crystalline silica, is conducted, -

(a) at least every 12 months: Provided an inspector may direct an employer to re-conduct the exposure monitoring or part thereof;

(b) by an approved inspection authority; and

(c) an employer or self-employed person contemplated in subregulation 5 must-

(i) develop a documented silicosis elimination plan;

(ii) submit annually to the Department, a report on crystalline silica exposure in the format of Annexure 3, by 31 March of each year.

14. Medical screening and surveillance

(1) Where the HCA risk assessment, including consideration of all routes of intake, or the exposure monitoring for HCA, comparative to an OEL or BEI as the case may be, identifies a significant exposure risk for an employee carrying out work using, handling, generating of storing HCA, the employer must obtain the opinion of an occupational medicine practitioner to determine whether it is necessary to conduct medical screening of employees.

(2) Where significant exposure risk is identified in terms of subregulation (1), the occupational medicine practitioner must consider if-

(a) there is significant risk to an employee's health;

(b) an employee has a health condition that makes the employee vulnerable to an HCA, or which impacts the proper use of personal protective equipment;

(c) there is an identifiable occupational disease or adverse effect related to the HCA;

(d) there is a reasonable likelihood that the disease or effect may occur under the particular exposure conditions of their work; and

(e) there are valid techniques to diagnose indications of the disease or the effect, as far as is reasonably practicable.

(3) Where the need for medical surveillance has been determined as necessary by the occupational medicine practitioner, as contemplated in subregulation (2), the occupational medicine practitioner must specify requirements for medical screening including-

(4) an evaluation of the employee's medical, occupational and exposure history;

(a) the appropriate clinical examination and medical tests;

(b) the intervals at which medical screening must be conducted, appropriate to the health risks and health status of the employee.

(4) The employer must ensure that medical screening contemplated in subregulation (3) is carried out by an occupational health practitioner-

(a) immediately before or within 14 days after a person commences employment as is practicable; and

(b) subsequently, at intervals recommended by the occupational medicine practitioner, but not exceeding 24 months.

(5) After the initial or periodic medical screening evaluation has been conducted, the occupational medicine practitioner must notify the employer in writing by means of a medical certificate of fitness, and inform the employee accordingly, if-

(a) the employee has a medical condition which;

(i) prevents the wearing of other personal protective equipment, where the employee's job requires the wearing of respiratory protective equipment or other any other personal protective equipment; or

(ii) is likely to be aggravated by the exposures at that workplace;

(b) the medical screening evaluation identified an adverse health effect caused by exposure to an HCA at that workplace.

(6) With respect to the medical certificate of fitness contemplated in subregulation (5)-

(a) The certificate must indicate-

(i) recommendations pertinent to the employee's fitness to perform the inherent requirements of the job, or the presence of an occupational disease, without including confidential medical information;

(ii) if any restrictions or conditions apply to any specified duties performed by the employee;

(iii) the period for which any restrictions or conditions, as applicable, should be applied;

(b) The employer must, as far as is reasonably practicable-

(i) accommodate the conditions or restrictions recommended; and

(ii) only permit an employee who has been medically certified for restricted duties to return to normal duties if the employee has been certified fit for those duties by an occupational medicine practitioner.

(7) The employer must, where medical screening has been determined necessary by the occupational medicine practitioner as contemplated in subregulation (3), establish and maintain a documented system of medical surveillance including-

(a) an analysis of the screening results over time, to look for abnormal trends in health status, potentially resulting from adverse effects of exposure to an HCA; and

(b) must be overseen by an occupational medicine practitioner;

(c) using the results of subregulation 7(a) to identify the need for targeted exposure prevention in the workplace.

(8) The employer must investigate and report the occupational disease contemplated in subregulation (6)(a) in compliance with regulation 8 of the General Administrative Regulations, and section 25 of the Occupational Health and Safety Act, 85 of 1993.

(9) The employer must-

(a) ensure that the employee provides written informed consent for inclusion in the medical screening;

(b) ensure that the employee provides written informed consent for inclusion in the surveillance programme.

(10) The employer must ensure that an exit medical screening is carried out by an occupational health practitioner on termination of an employee's service.

(11) An employee may appeal any finding of an occupational medical practitioner stipulated in the medical certificate of fitness to the chief inspector, in writing within 60 days of receiving the certificate.

15. Personal protective equipment and facilities

(1) Personal protective equipment must be provided by an employer to adequately control the HCA to which the employee is exposed-

(a) where reasonable control of exposure cannot be achieved for an HCA by means contemplated in regulation 11(2)(a), (b), (c) or (d);

(b) for an HCA with an OEL ML, the additional requirements of Regulation 11(1)(b) apply;

(c) as an interim control measure, for an HCA, while other preferred control measures are being designed and installed; and

(d) whilst conducting preventative or breakdown maintenance or shutdown maintenance work.

(2) The employer must ensure that personal protective equipment provided under subregulation (1), is selected to minimise risk to health by ensuring that the personal protective equipment is-

(a) suitable having regard to the nature of the work and any hazard associated with the work, with consideration of the SDS recommendations as contemplated in regulation 4(3)(h) and exposure risk determined in regulations 10 and 13;

(b) capable of controlling exposure to the HCA;

(c) in the case of an HCA which can be absorbed through the skin, is impermeable to HCAs

(d) readily available to employees who require personal protective equipment;

(e) properly used, worn and maintained by the employee, by enforcing its use through providing adequate information, instruction, training and supervision;

(f) in relation to issuing of respiratory protective equipment, ensure the equipment is appropriate for-

(i) controlling the exposure to below the OEL - RL for the relevant HCA;
(ii) achieving a good seal to the face, where tight fitting respiratory protective equipment is required to control exposure;
(iii) the size and fit for the employee who has to use it;
(iv) the type of work to be done;
(v) the physical effort required to do the work;
(vi) the length of time it will have to be worn;
(vii) the requirements in relation to the work for visibility, comfort and employee communication;
(viii) compatibility with any other personal protective equipment that may be needed; and
(ix) any recommendations made by the occupational health practitioner.

(3) Reusable personal protective equipment must be maintained, repaired or replaced so that it continues to minimise risk to health of the employee who uses it, including by ensuring that the equipment is-
(a) clean, decontaminated and sanitised;
(b) examined at suitable intervals and if found to be defective, make repairs before further use or replace the equipment; and
(c) when not in use during breaks, respiratory protective equipment must only be stored in a designated readily accessible container, limiting HCA contamination of the respiratory protective equipment.

(4) An employer must as far as is reasonably practicable, ensure that all contaminated personal protective equipment is cleaned and handled in accordance with the following-
(a) where the equipment is cleaned on the premises of an employer, care must be taken to prevent contamination during handling, transport and cleaning;
(b) where the equipment is sent off the premises to a contractor for cleaning purposes-
(i) the equipment must be packed in impermeable containers;
(ii) the containers must be tightly sealed and have a clear indication thereon that the contents thereof are contaminated; and
(iii) the relevant contractor must be fully informed of the requirements of these regulations and the precautions to be taken for the handling of the contaminated equipment.

(5) Subject to the provisions of subregulation (4)(b) an employer must ensure that no person removes dirty or contaminated personal protective equipment from the premises: Provided that where contaminated personal protective equipment has to be disposed of, it must be treated as HCA waste as contemplated in regulation 8.

(6) Subject to the provisions of the Facilities Regulations, an employer must, where reasonably practicable, provide employees using personal protective equipment as contemplated in subregulation (1), with-
(a) adequate washing facilities which are readily accessible and located in an area where the facilities will not become contaminated, in order to enable the employees to meet a standard of personal hygiene consistent with the adequate control of exposure, and to avoid the spread of an HCA;
(b) two separate lockers separately labelled 'personal protective equipment' and 'personal clothing', and ensure on completion of work for that day, that the personal protective equipment is stored separately in the personal protective equipment locker; and
(c) separate 'clean' and 'dirty' change rooms if the employer uses or processes an HCA to the extent that the HCA could endanger the health of persons outside of the workplace.

16. Respirator zones

(1) An employer must ensure, subject to regulation 11(1), that a respirator zone or temporary respirator zone is declared for any workplace or part of a workplace under their control, where the concentration of an HCA in the air is or may be, such that the exposure of employees working in that workplace exceeds the OEL without the wearing of respiratory protective equipment.

(2) A respirator zone may be declared, during normal operations, including when-
   (a) it is not possible to achieve reasonable control; or
   (b) control is not reasonable or practical due to frequency, duration or nature of the operation or task.

(3) A temporary respirator zone may be declared, during abnormal operations, including when engineering controls are-
   (a) rendered ineffective due to a temporary breakdown;
   (b) being installed or repaired; or
   (c) ineffective to control exposures in an emergency situation, such as a spill or other temporary situations resulting in increased exposure.

(4) The respirator zone or temporary respirator zone must be clearly demarcated and identified by relevant symbolic safety signage.

(5) The employer must ensure that no person enters or remains in a respirator zone or temporary respirator zone unless they are wearing the required respiratory protective equipment and other personal protective equipment, as contemplated in regulation 15.

17. Information, instruction and training

(1) An employer who undertakes work which exposes an employee to an HCA, must inform and consult the relevant health and safety representatives or health and safety committee established for that workplace, of the-
   (a) intention to conduct-
      (i) a risk assessment contemplated in regulation 10;
      (ii) exposure monitoring contemplated in regulation 13;
      (iii) medical screening and surveillance contemplated in regulation 14; and
      (iv) training contemplated in subregulation (2).
   (b) documented outcomes of the-
      (i) risk assessment contemplated in regulation 10;
      (ii) exposure monitoring contemplated in regulation 13; and
      (iii) medical surveillance contemplated in regulation 14.
   (c) an employer must provide suitable and adequate information, instruction and training, to any employee, prior to any potential exposure to an HCA.

(2) The information, instruction and training contemplated in subregulation (1)(c), must include-
   (a) the contents and scope of these regulations including but not limited to-
      (i) OELs in place; and
      (ii) duties of persons who are likely to be exposed to an HCA, as contemplated in regulation 18;
   (b) details of the HCA to which the employee is likely to be exposed at the workplace including-
      (i) where the HCAs, can be found and potential sources of exposure;
      (ii) information on the potential risk to health and safety;
      (iii) and the outcomes of the HCA risk assessment contemplated in regulation 10 and exposure monitoring contemplated in regulation 13;

(c) how to access the relevant SDS's, risk assessment, exposure monitoring records and personal medical records;
(d) the information that each part of an SDS provides;
(e) the information that each part of the label on containers provides and why the information is being provided;
(f) the work practices and procedures to be followed in the use, handling, storage, transportation, spill clean-up, disposal, emergency situations, good housekeeping and personal hygiene for HCAs;
(g) the differing effects of exposure to HCA to men, women, young employees and vulnerable employees, where such difference may exist;
(d) the necessity of personal exposure monitoring, biological monitoring and medical surveillance;
(h) the need for personal protective equipment including respiratory protective equipment as well as the correct use, storage and maintenance;
(i) the necessity, correct use, maintenance and limitations of safety equipment, facilities and engineering control measures provided.

(3) The employer must provide suitable and adequate refresher information and training, as contemplated in subregulation (2), at least annually or-

(a) when there is a significant change in the type of work carried out or methods of work used by the employer,

(b) when recommended by the health and safety committee or health and safety representative, or

(c) the need for training is identified within the risk assessment.

(4) An employer must give written instructions of the procedures to be followed in the event of spillages, leakages or any similar emergency situation, to the drivers of vehicles transporting the HCA.

(5) As contemplated in section 37(2) of the Act, the employer must agree in writing to the arrangements and procedures to ensure compliance by the mandatory, to information and training requirements.

(6) An employer or self-employed person must ensure, as far as is reasonably practicable, persons other than employees who may be affected by HCA exposure at the workplace, are appropriately informed and instructed.

18. Duties of persons who may be exposed to HCA

(1) Any person who is or may be exposed, must obey a lawful instruction, which may be given as part of information, instruction and training as contemplated in regulation 17, by or on behalf of the employer or a self-employed person, regarding-
(a) preventative measures to avoid the uncontrolled release of an HCA;
(b) making full and proper use of any control measure or facility provided by the employer;
(c) inspecting, using, cleaning, wearing, storing or disposing of personal protective equipment, including respiratory protective equipment and protective clothing;
(d) removing contaminated personal protective equipment when leaving the working area and keeping it apart from uncontaminated personal protective equipment;
(e) ensuring personal protective equipment is returned after use and correctly stored, if not of the disposable type;
(f) immediately informing the employer of any damage to, defect in, or need to clean or decontaminate or replace any personal protective equipment of which the employee becomes aware;

(g) not intentionally misusing or damaging any control measure including personal protective equipment or facility provided by the employer;
(h) determining personal exposure, which may include the wearing of monitoring equipment to measure exposure;
(i) attending scheduled medical screening or medical surveillance and associated biological monitoring or biological effect monitoring, as required by these regulations;
(j) permitting medical screening, medical surveillance and associated biological monitoring or biological effect monitoring as required by these regulations to be carried out, including for biological specimens to be collected;
(k) the cleaning up and disposal of materials containing HCA, in a way that will limit personal exposure;
(l) housekeeping at the workplace, personal hygiene and environmental and health practices; and
(m) attending and participating as needed in information, instruction and training provided by the employer.

19. Records

(1) An employer or self-employed person must-
(a) keep written or electronic records of-
(i) risk assessments;
(ii) exposure monitoring;
(iii) medical screening and surveillance reports;
(iv) the action plan as contemplated in regulations 10(1) (d) and 13 (3);
(v) information, instruction and training, as contemplated in regulation 17(2);
(vi) refresher information and training, as contemplated in regulation 17(4);
(vii) maintenance of control measures, as contemplated in regulation 12(2); and
(viii) reported occupational diseases as contemplated in regulation 14(5).
(b) keep records for a minimum period of 40-years for the records contemplated in regulations 10, 12, 13, 14 and 17;
(c) make records, contemplated in regulations 12, 13, 14 and 17, available to the relevant health and safety representative, health and safety committee or to an inspector.
(d) he availability of the records contemplated in regulation 14, are subject to formal written consent of the relevant employee; and

(2) If an employer or self-employer person ceases activities, the employer or self-employer person must inform the relevant chief director: provincial operations of -

(a) where the records listed in sub-regulation 1 (a) will be kept; and
(b) how those records will be accessed, when required.

20. Prohibitions

(1) No person must-
(a) smoke, eat, drink or keep food or beverages in a respirator zone or temporary respirator zone, or permit any other person to smoke, eat, drink or keep food or beverages in that zone;
(b) use compressed air or permit the use of compressed air to remove particles of an HCA from any person or a person's clothing;

(c) use compressed air at a pressure of more than 207 Kilopascals; Provided that air of a lower pressure may be used to clean hard to reach equipment or hot equipment where other methods are not practicable and the risk assessment indicated that the risk to health and safety caused by the use can be mitigated;
(d) use statements such as 'non-toxic', 'non-harmful', 'non-hazardous' or other statements indicating that the HCA is not hazardous or any other statements that are inconsistent with its GHS classification, on the label or packaging of any HCA;
(e) use any OEL-ML HCA as a cleaning agent, where it is reasonably practicable to use an OEL- RL HCA;
(f) use nuisance dust masks to protect against any HCA, where nuisance dust masks are not classified as personal protective equipment, including respiratory protective equipment, and are not NIOSH or CE marked;
(g) declare a permanent respirator zone for an HCA with a OEL ML;
(h) use any dry method to cut or grind crystalline silica containing materials;
(i) manufacture, procure, use, handle or store within the workplace, HCAs that are-
(i) prohibited HCAs listed in Table 1 of Annexure 2;
(ii) ozone depleting substances, provided for in the Regulations Regarding the Phasing-out and Management of Ozone-depleting Substances, GN351 of 8 May 2014"; and
(iii) persistent Organic Pollutants prohibited by the Prohibition on the Import, Export, Possession, Acquisition, Sale, Use and Disposal Of Agricultural Remedies, under the Fertilizers, Farm Feeds, Agricultural Remedies And Stock Remedies Act, 1947 (Act No. 36 Of 1947), and published under Government Notice No. R.862 of 29 July 2016.

21. HCA Technical Committee

(1) The Advisory Council must establish an HCA health and safety technical committee which must consist of-
(a) a chairperson designated by the chief inspector from the Department of Employment and Labour;
(b) two persons designated by the chief inspector from the employees of the Department of Employment and Labour;
(c) three persons designated by employer's organisations to represent employers;
(d) three persons designated by employee's organisations representing the federation ofunions;
(e) one person from the field of HCA representing a higher educational institution;
(f) one person to represent a professional body recognised by the chief inspector;
(g) one person representing occupational medicine; and
(h) persons who are competent in respect of the matters to be dealt with by the HCA technical committee who have been co-opted by the committee with the authorisation of the council.
(2) The Advisory Council must appoint members of the HCA health and safety technical committee for a period determined at the time of appointment: Provided that the Advisory Council may after having afforded a member a reasonable opportunity to respond, discharge a member at any time, for reasons that are fair and just, and appoint a new member to the committee.
(3) The HCA health and safety Technical Committee must –
(a) advise the Advisory Council on HCA related matters, including but not limited to codes, standards and training requirements;
(b) make recommendations and submit reports to the Advisory Council regarding any matter to which these regulations relate;

(c) advise the Advisory Council regarding any matter referred to the HCA health and safety technical committee by the Advisory Council;

(d) perform any other function for the administration of a provision of these regulations that may be requested by the Advisory Council; and

(e) conduct its work in accordance with the instructions and rules of conduct framed by the Advisory Council.

(f) advise the chief inspector regarding appeals lodged in writhing regarding medical certificate of fitness as contemplated in regulation 14 (11).

22. Offences and penalties

Any person who contravenes or fails to comply with any provision of regulation 3,4,5,6,7,8,9, 10, 11, 12, 13,14 ,15, 16, 17, 18, 19 and 20 shall be guilty of an offence and liable on conviction to a fine or to imprisonment for a period not exceeding six months and, in the case of a continuous offence, to an additional fine of R200 for each day on which the offence continues or additional imprisonment of one day for each day on which the offence continuous: Provided that the period of such additional imprisonment must in no case exceed 90 days.

23. Repeal of regulations

The Regulations for Hazardous Chemical Agents, 2021 published under Government Notice No. R. 11263 of 29 April 2021, and Occupational Exposure for Silica in Table 1 of the Hazardous Chemical Agents Regulation, published under Government Notice No. 32930 of 5 February 2012, are repealed 18 months after the date of promulgation.

24. Short title

These regulations shall be called the Regulations for Hazardous Chemical Agents, 202X.

ANNEXURE 1

TABLE 1: GHS HAZARD CLASSES – PHYSICAL HAZARDS

HAZARD CLASSES	CATEGORIES/DIVISIONS/TYPES					
Explosives	Unstable	Div 1.1	Div 1.2	Div 1.3	Div 1.4	Div 1.5
Flammable gases	Cat 1A & B	Cat 2				
Aerosols, flammable and non-flammable	Cat 1	Cat 2				
Oxidising gases	Cat 1					
Gases under pressure Compressed gas Liquefied gas Refrigerated liquefied gas Dissolved gas	 Cat 1 Cat 1 Cat 1 Cat 1					
Flammable liquids	Cat 1	Cat 2	Cat 3			
Flammable solids	Cat 1	Cat 2				
Self-reactive substances and mixtures	Type A	Type B	Type C	Type D	Type E	Type F
Pyrophoric liquids	Cat 1					
Pyrophoric solids	Cat 1					
Self-heating substances and mixtures,	Cat 1	Cat 2				
Substance and mixtures which, in contact with water, emit flammable gases	Cat 1	Cat 2	Cat 3			
Oxidising liquids	Cat 1	Cat 2	Cat 3			
Oxidising solids	Cat 1	Cat 2	Cat 3			
Organic peroxides	Type A	Type B	Type C	Type D	Type E	Type F
Corrosive to metals	Cat 1					
Desensitized explosives	Cat 1		Cat 2		Cat 3	

Table 2: GHS HAZARD CLASSES – HEALTH HAZARDS

HAZARD CLASSES	CATEGORIES			
Acute toxicity				
Oral	Cat 1	Cat 2	Cat 3	Cat 4
Dermal	Cat 1	Cat 2	Cat 3	Cat 4
Inhalation	Cat 1	Cat 2	Cat 3	Cat 4
Skin corrosion/irritation	Cat 1, 1A, B & C[a]	Cat 2		
Serious eye damage/eye irritation	Cat 1	Cat 2/ 2A		
Respiratory sensitizer	Cat 1	Cat 1A[a]	Cat 1B[a]	
Skin sensitizer	Cat 1	Cat 1A[a]	Cat 1B[a]	
Germ cell mutagenicity	Cat 1, 1A & B	Cat 2		
Carcinogenicity	Cat 1, 1A & B	Cat 2		
Reproductive toxicity	Cat 1A & B	Cat 2	Lactation	
Specific target organ toxicity - single exposure	Cat 1	Cat 2	Cat 3	
Specific target organ toxicity - repeated exposure	Cat 1	Cat 2		
Aspiration hazard	Cat 1			

[a] sub-categories may be applied where data are sufficient and where required by a competent authority.

Table 3: GHS HAZARD CLASSES – ENVIRONMENTAL HAZARDS*

HAZARD CLASSES	CATEGORIES	
Hazardous to the aquatic environment short-term (Acute)	Acute 1	
Hazardous to the aquatic environment long-term (Chronic)	Chronic 1	Chronic 2
Hazard to the ozone layer	Cat 1	

* the hazard classes and categories provided in Table 3 for environmental hazards are intended as references and a guideline for the classification of chemicals.

For Annexure 1, Table 1 and 2, the classes and categories provided are based on GHS, Rev. 10, 2022, they will be adjusted with changes to the GHS, as may be updated from time to time.

Table 4: IDENTITY OF INGREDIENTS TO BE DISCLOSED

HAZARD CLASSES	CATEGORIES			
Acute toxicity				
Oral	Cat 1	Cat 2	Cat 3	Cat 4
Dermal	Cat 1	Cat 2	Cat 3	Cat 4
Inhalation	Cat 1	Cat 2	Cat 3	Cat 4
Respiratory or skin sensitisation	Cat 1			
Germ cell mutagenicity	Cat 1A & B	Cat 2		
Carcinogenicity	Cat 1A & B	Cat 2		
Reproductive toxicity	Cat 1A & B	Cat 2	Lactation	
Specific target organ toxicity - single exposure	Cat 1	Cat 2	Cat 3	
Specific target organ toxicity - repeated exposure	Cat 1	Cat 2		
Aspiration hazard	Cat 1			
Skin corrosion or irritation	Cat 1A, B & C			
Serious eye damage or eye irritation	Cat 1	Cat 2A		

Table 5: GENERIC NAMES USED TO DISCLOSE IDENTITY OF INGREDIENTS

HAZARD CLASSES	CATEGORIES			
Acute toxicity				
Oral				Cat 4
Dermal				Cat 4
Inhalation				Cat 4
Aspiration hazard	Cat 1			
Serious eye damage or eye irritation		Cat 2A		
Skin corrosion or irritation		Cat 2		
Specific target organ toxicity - single exposure			Cat 3	

ANNEXURE 2

Table 1: PROHIBITED HAZARDOUS CHEMICAL AGENTS

HAZARDOUS CHEMICAL AGENT	**CAS NUMBER**
4-AMINOPHENYL and its salts	92-67-1
BENZIDINE and its salts	92-87-5
2-NAPHTYLAMINE and its salts	91-59-8
4-NITROPHENYL	92-93-3
POLYCHLORINATED BIPHENYLS (PCB), except MONO- and DICHLORINATED BIPHENYLS	1336-36-3
POLYCHLORINATED TERPHENYLS (PCT)	61788-33-8
PREPARATIONS with a PCB or PCT content higher than 0,01% by weight	

Table 2: OCCUPATIONAL EXPOSURE LIMITS – MAXIMUM LIMITS FOR HAZARDOUS CHEMICAL AGENTS

AGENT	CAS NUMBER	FORMULA	RHCA – OEL ppm	RHCA – OEL mg/m³	RHCA – STEL/C ppm	RHCA – STEL/C mg/m³	NOTATIONS
A							
Acrylamide	79-06-1	CH_2=CHCONH$_2$	-	0,06(IFV)	-	-	CARC, SKIN, DESEN
Acrylonitrile	107-13-1	CH_2=CHCN	4	-	-	-	SKIN
Arsenic and compounds, except arsine [as As]	7440-38-2	As	-	0,02	-	-	CARC
Asbestos, all forms (see Asbestos Regulations)	1332-21-4	-	-	-	-	-	CARC
B							
Benzene	71-43-2	C_6H_6	1	-	5	-	CARC, SKIN
Bis(chloromethyl) ether [BCME]	542-88-1	$(CH_2Cl)_2O$	0,002	-	-	-	CARC
1,3-Butadiene [buta-1,3-diene]	106-99-0	$CH_2=(CH)_2=CH_2$	4	-	-	-	CARC
2-Butoxyethanol [EGBE]	111-76-2	-	40	-	-	-	
C							
Cadmium and compounds [as Cd]	7440-43-9 (metal)	Cd (metal)					CARC (cadmium metal, cadmium chloride, fluoride and sulphate)
			-	0,004(R)	-	-	
Total particulate			-	0,02	-	-	
Carbon disulphide	75-15-0	CS_2	2	-	-	-	SKIN

AGENT	CAS NUMBER	FORMULA	RHCA – OEL ppm	RHCA – OEL mg/m³	RHCA – STEL/C ppm	RHCA – STEL/C mg/m³	NOTATIONS
Chromium, and inorganic compounds	7440-47-3						
Trivalent chromium compounds: water-soluble compounds		Cr(III)	-	0,006(I)	-	-	CARC, RSEN
Hexavalent chromium compounds: water-soluble compounds		Cr(VI)	-	0,0004(I)	-	0.001(I)	CARC, RSEN, SKIN
Chromyl chloride	14977-61-8	Cr(VI)	0,0002(IFV)	-	0,0005(IFV)	-	CARC, RSEN, SKIN
Chromite ore processing		See hexavalent and trivalent chromium compounds					
D							
1,2-Dibromoethane	106-93-4	$BrCH_2CH_2Br$	0,5	-	-	-	CARC, SKIN
Dichloromethane	75-09-2	CH2Cl2	100	-	-	-	SKIN, CARC
2,2'-Dichloro-4,4'-methylene dianiline [MbOCA]	101-14-4	$CH_2(C_6H_3ClNH_2)_2$	0,02	-	-	-	CARC, SKIN
E							
2-Ethoxyethanol [EGEE], [ethylene glycol monoethyl ether]	110-80-5	$CH_3CH_2OCH_2CH_2OH$	10	-	-	-	SKIN
2-Ethoxyethyl acetate [EGEEA], [ethylene glycol monoethyl ether acetate]	111-15-9	$C_2H_5OCH_2CH_2OOCCH_3$	10	-	-	-	SKIN
Ethylene oxide	75-21-8	CH_2CH_2O	2	-	-	-	CARC
F							
Formaldehyde	50-00-0	HCHO	0,2	-	0,6	-	CARC, DSEN, RSEN

AGENT	CAS NUMBER	FORMULA	RHCA – OEL ppm	RHCA – OEL mg/m³	RHCA – STEL/C ppm	RHCA – STEL/C mg/m³	NOTATIONS
G							
Grain dust (oat, wheat, barley, maize, rye)	-	-	-	8	-	-	RSEN
H							
Hydrogen cyanide [as CN]	74-90-8	HCN	-	-	C 9,4	-	SKIN
L							
Lead and compounds (see Lead Regulations)		Pb	See Lead Regulations				CARC (lead compounds, inorganic)
Tetraethyl lead [as Pb]	78-00-2		See Lead Regulations				
Tetramethyl lead [as Pb]	75-74-1		See Lead Regulations				
N							
Nickel and its inorganic compounds [as Ni]	7440-02-0						
Soluble inorganic compounds (NOS)				0,1[I]			CARC
				0,02[R]			CARC
Insoluble inorganic compounds (NOS)				0,1[I]			CARC
				0,02[R]			CARC

AGENT	CAS NUMBER	FORMULA	RHCA – OEL ppm	RHCA – OEL mg/m³	RHCA – STEL/C ppm	RHCA – STEL/C mg/m³	NOTATIONS
R							
Rubber fume	-	-	-	0,6	-	-	CARC
S							
*Silica, crystalline							
Cristobalite	14464-46-1	SiO	-	0,1(R)	-	-	CARC
Quartz	14808-60-7	SiO_2	-	0,1(R)	-	-	CARC
Tridymite	15468-32-3	SiO_2	-	0,1(R)	-	-	
Tripoli	1317-95-9	SiO_2	-	0,1(R)	-	-	
Styrene, monomer	100-42-5	$C_6H_5CH=CH_2$	20	-	40	-	CARC, OTO
T							
Talc (containing asbestos fibres)	14807-96-6	$Mg_3Si_4O_{10}(OH)_2$	See Asbestos Regulations				CARC
1,1,1-Trichloroethane	71-55-6	CH_3CCl_3	700	-	900	-	
Trichloroethylene	79-01-6	$CCl_2=CHCl$	20	-	50	-	CARC, SKIN
V							
Vinyl chloride	75-01-4	$H_2C=CHCl$	2	-	-	-	CARC
W							
Wood dust species: oak, beech, birch, mahogany, teak and walnut	-	-	-	2(I)	-	-	CARC, RSEN

Abbreviations:

mg/m³: milligrams per cubic meter
OEL-ML: occupational exposure limit – maximum limit
ppm: parts per million
RHCA: Regulations for Hazardous Chemical Agents

STEL/C: short-term exposure limit, ceiling limit. Ceiling limit is differentiated by a C next to the limit

Notations:

CARC: denotes carcinogenicity, which is based on GHS categorisation, including category 1A and 1B;
DSEN: dermal sensitisation, potential to produce dermal sensitisation;
E: the value is for particulate matter containing no asbestos and ≤ 1% crystalline silica;
F: respirable fibres: length > 5 µm; aspect ratio ≥ 3:1 as determined by the membrane filter method at 400-450X magnification (4 mm objective), using phase-contrast illumination;
H: aerosol only;
I: inhalable fraction;
IFV: inhalable fraction and vapour;
Inhalable particulate matter (IPM): for those materials that are hazardous when deposited anywhere in the respiratory tract;
OTO: Ototoxicant
R: respirable fraction;
RSEN: respiratory sensitisation, potential to produce respiratory sensitisation;
SKIN: danger of cutaneous absorption – refers to the potential significant contribution to the overall exposure by the cutaneous route, including mucous membranes, and the eyes by contact with vapours, liquids and solids; overexposure may also occur following dermal contact with liquids and aerosols, even when airborne exposures are at or below the OEL;
T: thoracic fraction; and
V: vapour fraction.

RSEN and DSEN do not imply that sensitisation is the critical effect on which the OEL is based, nor do they imply that this effect is the sole basis for the agent's OEL.

Note:
*All industries handling, manufacturing and producing silica dust are required to submit biennial reports that include the information on Annexure 3.

Table 3: OCCUPATIONAL EXPOSURE LIMITS - RESTRICTED LIMITS FOR HAZARDOUS CHEMICAL AGENTS

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m^3	OEL-STEL/C ppm	OEL-STEL/C mg/m^3	NOTATIONS
A							
Acetaldehyde	75-07-0	CH_3CHO	-	-	50	-	CARC
Acetic acid	64-19-7	CH_3COOH	20	-	30	-	
Acetic anhydride	108-24-7	$(CH_3CO)_2O$	2	-	6	-	
Acetone	67-64-1	$(CH_3)_2CO$	500	-	1000	-	
Acetonitrile	75-05-8	CH_3CN	40	-	-	-	SKIN
Acetylsalicylic acid [aspirin]	50-78-2	$CH_3COOC_6H_4COOH$	-	10	-	-	
Acrolein [Acrylaldehyde]	107-02-8	$CH_2=CHCHO$	-	-	0,2	-	SKIN
Acrylic acid	79-10-7	$CH_2=CHCOOH$	4	-	-	-	SKIN
Aldrin	309-00-2	$C_{12}H_8Cl_6$	-	0,1 (IFV)	-	-	SKIN
Allyl alcohol	107-18-6	$CH_2=CHCH_2OH$	-	1	-	-	SKIN
Allyl chloride	107-05-1	$CH_2=CHCH_2Cl$	2	-	4	-	SKIN
Allyl glycidyl ether [AGE]	106-92-3	$C_6H_{10}O_2$	2	-	-	-	
Aluminium metal and insoluble compounds [as Al]	7429-90-5 (metal)	Al (metal)	-	2 (R)	-	-	
Aminodimethylbenzene	95-64-7				See xylidine		
2-Aminoethanol	141-43-5	$NH_2CH_2CH_2OH$			See ethanolamine		
Ammonia, anhydrous	7664-41-7	NH_3	50	-	70	-	
Ammonium chloride, fume	12125-02-9	NH_4Cl	-	10	-	20	
Ammonium sulphamate	7773-06-0	$NH_2SO_3NH_4$	-	10	-	-	
Aniline	62-53-3	$C_6H_5NH_2$	4	-	-	-	SKIN
Anisidines, o- and p-isomers	90-04-0, 104-94-9	$NH_2C_6H_4OCH_3$	-	1	-	-	CARC, SKIN

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
Antimony and compounds [as Sb], except antimony trisulphide, antimony hydride	7440-36-0	Sb	-	1	-	-	CARC
Antimony hydride	7803-52-3				See stibine		
Antimony trioxide	1309-84-4			0.04(I)			CARC
Arsine	7784-42-1	AsH_3	0,01	-	-	-	
Asphalt, petroleum fumes	8052-42-4	-	-	1(I)	-	-	CARC
Atrazine	1912-24-9	$C_8H_{14}ClN_5$	-	4	-	-	CARC, SKIN
Azinphos-methyl B	86-50-0	$C_{10}H_{12}O_3PS_2N_3$	-	0,4(IFV)	-	-	DSEN, SKIN
Barium and soluble compounds [as Ba]	7440-39-3	-	-	1	-	-	
Barium sulphate	7727-43-7	$BaSO_4$	-	10(I, E)	-	-	
Benomyl	17804-35-2	$C_{14}H_{18}N_4O_3$	-	2(I)	-	-	DSEN
Benzene-1,2,4,-tricarboxylic acid 1,2-anhydride	552-30-7	$C_9H_4O_5$	-	0,001(IFV)	-	0,004(IFV)	DSEN, RSEN, SKIN
p-Benzoquinone	106-51-4	$C_6H_4O_2$	0,2	-	-	-	
Benzoyl peroxide	94-36-0	$(C_6H_5CO)_2O_2$	-	10	-	-	
Benzyl chloride	100-44-7	$C_6H_5CH_2Cl$	2	-	-	-	CARC
Beryllium and compounds [as Be]	7440-41-7	Be	-	0,0001(I)	-	-	DSEN, RSEN, SKIN
Biphenyl	92-52-4	$C_6H_5C_6H_5$	0,4	-	-	-	
Bismuth telluride [as Bi_2Te_3]							
Undoped	1304-82-1	Bi_2Te_3	-	10	-	-	
Selenium-doped	-		-	10	-	-	

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
Borates, tetra, sodium salts							
Anhydrous	1330-43-4	$Na_2B_4O_7$	-	4	-	10	
Decahydrate	1303-96-4	$Na_2B_4O_7.10H_2O$	-	4	-	10	
Pentahydrate	12179-04-3	$Na_2B_4O_7.5H_2O$	-	4	-	10	
Boron oxide	1303-86-2	B_2O_3	-	10	-	-	
Boron tribromide	10294-33-4	BBr_3	-	-	1,4	-	
Boron trifluoride	7637-07-2	BF_3	-	-	1,4	-	
Bromacil	314-40-9	$C_9H_{13}BrN_2O_2$	-	10	-	-	
Bromine	7726-95-6	Br_2	0,2	-	0,4	-	
Bromine pentafluoride	7789-30-2	BrF_5	0,2	-	-	-	
Bromoethane	74-96-4	CH_3CH_2Br	10	-	-	-	SKIN
Bromoethylene	593-60-2	$CH_2=CHBr$			See vinyl bromide		
Bromoform	75-25-2	$CHBr_3$	1	-	-	-	
Bromomethane	74-83-9	CH_3Br			See methyl bromide		
n-Butane	106-97-8	$CH_3CH_2CH_2CH_3$	-	-	2000	-	
2-Butanol [sec-butyl alcohol]	78-92-2	$CH_3CH(OH)CH_2CH_3$	200	-	-	-	
tert-Butanol [tert-butyl alcohol]	75-65-0	$(CH_3)_3COH$	200	-	-	-	
trans-But-2-enal					See crotonaldehyde		SKIN
n-Butyl acetate	123-86-4	$CH_3COO(CH_2)_3CH_3$	100	-	300	-	
sec-Butyl acetate	105-46-4	$C_6H_{12}O_2$	100	-	300	-	
tert-Butyl acetate	540-88-5	$CH_3COOC(CH_3)_3$	100	-	300	-	
Butyl acrylate	141-32-2	$CH_2=CHCOOC_4H_9$	4	-	-	-	DSEN
n-Butylamine	109-73-9	$CH_3(CH_2)_3NH_2$	-	-	C 10	-	SKIN

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
n-Butyl glycidyl ether [BGE]	2426-08-6	$C_4H_9OCH_2CHCH_2O$	6	-	-	-	DSEN, SKIN
n-Butyl lactate	138-22-7	$CH_3CH(OH)COOC_4H_9$	10	-	-	-	
o-sec-Butylphenol C	89-72-5	$C_2H_5(CH_3)CHC_6H_4OH$	10	-	-	-	SKIN
Calcium cyanamide	156-62-7	$CaNC{\equiv}N$	-	1	-	-	
Calcium hydroxide	1305-62-0	$Ca(OH)_2$	-	10	-	-	
Calcium oxide	1305-78-8	CaO	-	4	-	-	
Calcium silicate, [naturally occurring as wollastonite]	1344-95-2	$CaSiO_3$	-	$2^{(I, E)}$	-	-	
Calcium sulphate [including plaster of Paris and gypsum]	7778-18-9, 10034-76-1, 10101-41-4, 13397-24-5	$CaSO_4$	-	$10^{(I)}$	-	-	
Camphor, synthetic	76-22-2	$C_{10}H_{16}O$	4	-	6	-	
Caprolactam	105-60-2	$NH(CH_2)_5CO$		$10^{(IFV)}$			
Captafol	2425-06-1	$C_{10}H_9Cl_4NO_2S$	-	$0,2^{(IFV)}$	-	-	DSEN, RSEN, SKIN
Captan	133-06-2	$C_9H_8Cl_3NO_2S$	-	$10^{(I)}$	-	-	DSEN,
Carbaryl	63-25-2	$CH_3NHCOOC_{10}H_7$	-	$1^{(IFV)}$	-	-	SKIN
Carbofuran	1563-66-2	$C_{12}H_{15}NO_3$	-	$0,2^{(IFV)}$	-	-	
Carbon black	1333-86-4	C	-	$6^{(I)}$	-	-	CARC
Carbon dioxide	124-38-9	CO_2	10000	-	60000	-	
Carbon monoxide	630-08-0	CO	50	-	-	-	
Carbon tetrabromide	558-13-4	CBr_4	0,2	-	0,6	-	

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
Carbon tetrachloride	56-23-5	CCl_4	10	-	20	-	CARC, SKIN
Catechol	120-80-9	$C_6H_4(OH)_2$	10	-	-	-	CARC, SKIN
Cellulose	9004-34-6	$(C_6H_{10}O_5)_n$	-	10	-	-	
Cement [Portland cement]	-	-	-	$2^{(E, R)}$	-	-	
Chlordane	57-74-9	$C_{10}H_6Cl_8$	-	$1^{(IFV)}$	-	-	CARC, SKIN
Chlorine	7782-50-5	Cl_2	0,2	-	0,8	-	
Chlorine dioxide	10049-04-4	ClO_2		-	C 0,2	-	
Chlorine trifluoride	7790-91-2	ClF_3	-	-	C 0,2	-	
2-Chloroacetophenone	532-27-4	$C_6H_5COCH_2Cl$	0,1	-	-	-	
Chloroacetyl chloride	79-04-9	$ClCH_2COCl$	0,1	-	0,3	-	SKIN
Chlorobenzene	108-90-7	C_6H_5Cl	20	-	-	-	SKIN
Chlorobromomethane	74-97-5	CH_2BrCl	400	-	-	-	
Chlorodifluoromethane	75-45-6	$CHClF_2$	2000	-	-	-	
Chlorodiphenyl [PCBs]			-	-	-	-	CARC, SKIN
Chlorodiphenyl (42% chlorine)	53469-21-9	$C_6H_4ClC_6H_3Cl_2$ (approx.)	-	2	-	-	CARC, SKIN
Chlorodiphenyl (54% chlorine)	11097-69-1	$C_6H_3Cl_2C_6H_2Cl_3$ (approx.)	-	1	-	-	CARC, SKIN
1-Chloro-2,3-epoxy-propane	106-89-8	C_3H_5OCl			See epichlorohydrin		
Chloroethane	75-00-3	CH_3CH_2Cl			See ethyl chloride		
2-Chloroethanol	107-07-3	CH_2ClCH_2OH			See ethylene chlorohydrin		
Chloroethylene	75-01-4	$H_2C=CHCl$			See vinyl chloride		
Chloroform	67-66-3	$CHCl_3$	20	-	-	-	CARC, SKIN
1- Chloro-nitropane	600-25-9	C3H6ClNO2	4				
Chloropentafluoroethane	76-15-3	$CClF_2CF_3$	2000	-	-	-	
Chloropicrin	76-06-2	CCl_3NO_2	0,2	-	-	-	

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
beta-Chloroprene	126-99-8	$CH_2=CClCH=CH_2$	2	-	-	-	CARC, SKIN
alpha-Chlorotoluene	100-44-7	$C_6H_5CH_2Cl$			See benzyl chloride		
2-Chlorotoluene [o-Chlorotoluene]	95-49-8	$ClC_6H_4CH_3$	100	-	-	-	
2-Chloro-6-(trichloromethyl)pyridine	1929-82-4	ClC5H3NCCl3			See nitrapyrin		
Chlorpyrifos	2921-88-2	$C_9H_{11}Cl_3NO_3PS$		0,2(IFV)			SKIN
Chromium, metal							
Metallic chromium as Cr [0]	7440-47-3 (metal)	Cr (metal)	-	1(I)	-	-	
Coal dust:	-	-					
Anthracite			-	0,8(R)	-	-	
Bituminous or lignite			-	1,8(R)	-	-	
Coal tar pitch volatiles [as cyclohexane soluble fraction]	65996-93-2	-	-	0,4	-	-	CARC
Cobalt and cobalt inorganic compounds [as Co]	7440-48-4 (metal)	Co (metal)	-	0,04(I)	-	-	CARC, RSEN
Copper:							
Fume (copper oxide) [as Cu]	1317-38-0	CuO	-	0,4	-	-	
Dusts and mists [as Cu]	7440-50-8 (metal)	Cu (metal)	-	2	-	-	
Cotton dust, raw, untreated	-						

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m^3	OEL-STEL/C ppm	OEL-STEL/C mg/m^3	NOTATIONS
Cotton dust (less fly)			-	0,2$^{(T)}$	-	-	
Cotton dust		-	-	2,5	-	-	
Cresols, all isomers	95-48-7, 106-44-5, 108-39-4, 1319-77-3	$CH_3C_6H_4OH$	-	40$^{(IFV)}$	-	-	SKIN
Crotonaldehyde	4170-30-3	$CH_3CH=CHCHO$	-	-	0,6	-	SKIN
Cumene	98-82-8	$C_6H_5CH(CH_3)_2$	10	-	-	-	CARC, SKIN
Cyanamide	420-04-2	NH_2CN	-	4	-	-	SKIN
Cyanide salts [as CN]							
Calcium cyanide	592-01-8	$Ca(CN)_2$	-	-	-	5	SKIN
Potassium cyanide	151-50-8	KCN	-	-	-	5	SKIN
Sodium cyanide	143-33-9	NaCN	-	-	-	C 5	SKIN
Cyanogen	460-19-5	$(CN)_2$	-	-	C 10	-	
Cyanogen chloride	506-77-4	ClCN	-	-	C 0,6	-	
Cyclohexane	110-82-7	C_6H_{12}	200	-	-	-	
Cyclohexanol	108-93-0	$C_6H_{11}OH$	100	-	-	-	SKIN
Cyclohexanone	108-94-1	$C_6H_{10}O$	40	-	100	-	SKIN
Cyclohexene	110-83-8	C_6H_{10}	40	-	-	-	
Cyclohexylamine	108-91-8	$C_6H_{11}NH_2$	20	-	-	-	
Cyclonite [RDX]	121-82-4	$C_3H_6N_6O_6$	-	1	-	-	SKIN
Cyhexatin	13121-70-5	$(C_6H_{11})_3SnOH$	-	10	-	-	SKIN
D							
DMDT [p,p'-dimethoxydiphenyltrichloroethane]	-	-		See methoxychlor			
Diacetone alcohol	123-42-2	$CH_3COCH_2C(CH_3)_2OH$	100	-	-	-	

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
Diazinon	333-41-5	$C_{12}H_{21}N_2O_3PS$	-	0,02(IFV)	-	-	CARC, SKIN
Diazomethane	334-88-3	CH_2N_2	0,4	-	-	-	
Dibenzoyl peroxide	94-36-0	$(C_6H_5CO)_2O_2$			See benzoyl peroxide		
Diborane	19287-45-7	B_2H_6	0,2	-	-	-	
Diboron trioxide	1303-86-2	B_2O_3			See boron oxide		
Dibromodifluoromethane [difluorodibromomethane]	75-61-6	CBr_2F_2	200	-	-	-	
Dibutyl phenyl phosphate	2528-36-1	$C_{14}H_{23}O_4P$	0,6	-	-	-	SKIN
Dibutyl phosphate	107-66-4	$(C_4H_9O)_2(OH)PO$	-	10(IFV)	-	-	SKIN
Dibutyl phthalate	84-74-2	$C_6H_4(CO_2C_4H_9)_2$	-	10	-	-	
Dichloroacetylene	7572-29-4	ClC=CCl	-	-	0,2	-	
Diesel particulate matter as elemental C				0,16			
1,2-Dichlorobenzene [o-Dichlorobenzene]	95-50-1	$C_6H_4Cl_2$	50	-	100	-	SKIN
1,4-Dichlorobenzene [p-Dichlorobenzene]	106-46-7	$C_6H_4Cl_2$	20	-	-	-	CARC
Dichlorodifluoromethane [difluorodichloromethane]	75-71-8	CCl_2F_2	2000	-	-	-	
1,3-Dichloro-5,5-dimethyl hydantoin	118-52-5	$C_5H_6Cl_2N_2O_2$	-	0,4	-	0,8	
1,1-Dichloroethane	75-34-3	CH_3CHCl_2	200	-	-	-	SKIN
1,2-Dichloroethane	107-06-2	$ClCH_2CH_2Cl$	20	-	-	-	CARC, SKIN
1,1-Dichloroethylene	75-35-4	$CH_2=CCl_2$	-	10	-	-	

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
1,2 Dichloroethylene, cis and trans isomers	540-59-0	ClCH=CHCl	400	-	-	-	
Dichlorofluoromethane	75-43-4	$CHCl_2F$	20	-	-	-	
1,3-Dichloropropene (cis and trans isomers)	542-74-6		2	-	-	-	CARC, SKIN
1,3-Dichloropropene, cis and trans isomers	542-75-6	$ClHC=CHCH_2Cl$	2	-	-	-	CARC, SKIN
1,2-Dichlorotetrafluoro ethane	76-14-2	$CClF_2CClF_2$	2000	-	-	-	
Dichlorvos [DDVP]	62-73-7	$(CH_3O)_2POOCH=CCl_2$	-	0,2(IFV)	-	-	CARC, DSEN, SKIN
Dicyclopentadiene including Cyclopentadiene	77-73-6	$C_{10}H_{12}$	1	-	2	-	
Dicyclopentadienyl iron (as Fe)	102-54-5	$(C_5H_5)_2Fe$	-	10	-	-	
Dieldrin	60-57-1	$C_{12}H_8Cl_6O$	-	0,2(IFV)	-	-	SKIN
Diethanolamine	111-42-2	$(CH_2CH_2OH)_2NH$	-	2(IFV)	-	-	CARC, SKIN
Diethylamine	109-89-7	$(C_2H_5)_2NH$	10	-	30	-	SKIN
2-Diethylaminoethanol	100-37-8	$(C_2H_5)_2NCH_2CH_2OH$	4	-	-	-	SKIN
1,4-Diethylenediamine	110-85-0	$C_4H_{10}N_2$			See piperazine		
Diethylenetriamine [DETA]	111-40-0	$(NH_2CH_2CH_2)_2NH$	2	-	-	-	SKIN
Di-(2-ethylhexyl) phthalate [DEHP]	117-81-7	$C_6H_4(COOC_8H_{17})_2$	-	10	-	-	CARC
Diethyl ketone	96-22-0	$CH_3CH_2COCH_2CH_3$	400	-	600	-	
Diethyl phthalate	84-66-2	$C_6H_4(COOC_2H_5)_2$	-	10	-	-	
Diglycidyl ether [DGE]	2238-07-5	$(OCH_2CHCH_2)_2O$	0,02	-	-	-	
o-Dihydroxybenzene		$C_6H_4(OH)_2$			See catechol		

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
m-Dihydroxybenzene	108-46-3	$C_6H_4(OH)_2$			See resorcinol		
p-Dihydroxybenzene		$C_6H_4(OH)_2$			See hydroquinone		
Diisobutyl ketone	108-83-8	$[(CH_3)_2CHCH_2]_2CO$	50	-	-	-	
Diisopropylamine	108-18-9	$(CH_3)_2CHNHCH(CH_3)_2$	10	-	-	-	SKIN
N,N-Dimethylacetamide	127-19-5	$CH_3CON(CH_3)_2$	20	-	-	-	SKIN
Dimethylamine	124-40-3	$(CH_3)_2NH$	10	-	30	-	DSEN
N,N-Dimethylaniline	121-69-7	$C_6H_5N(CH_3)_2$	10	-	20	-	SKIN
1,3-Dimethylbutyl acetate	108-84-9	$C_8H_{16}O_2$	40	-	100	-	
N,N-Dimethylformamide	68-12-2	$HCON(CH_3)_2$	20	-	-	-	CARC, SKIN
Dimethyl phthalate	131-11-3	$C_6H_4(COOCH_3)_2$	-	10	-	-	
Dimethyl sulphate	77-78-1	$(CH_3)_2SO_4$	0,2	-	-	-	CARC, SKIN
Dinitolmide	148-01-6	$C_8H_7N_3O_5$	-	2	-	-	
Dinitrobenzene, all isomers	25154-54-5	$C_6H_4(NO_2)_2$	0,3	-	-	-	SKIN
Dinitro-o-cresol	534-52-1	$CH_3C_6H_2(OH)(NO_2)_2$	-	0,4	-	-	SKIN
Dinitrotoluene	25321-14-6	$CH_3C_6H_3(NO_2)_2$	-	0,4	-	-	CARC, SKIN
1,4-Dioxane	123-91-1	$OCH_2CH_2OCH_2CH_2$	40	-	-	-	CARC, SKIN
Dioxathion	78-34-2	$C_{12}H_{26}O_6P_2S_2$	-	$0,2^{(IFV)}$	-	-	SKIN
Diphenylamine	122-39-4	$(C_6H_5)_2NH$	-	10	-	-	
Diquat [diquat]	85-00-7	$C_{12}H_{12}Br_2N_2$					SKIN
	2764-72-9	-	-	$1^{(I)}$	-	-	
	6385-62-2	-	-	$0,2^{(R)}$	-	-	
Disulfoton	298-04-4	$C_8H_{19}O_2PS_3$	-	$0,1^{(IFV)}$	-	-	SKIN
6,6-Di-tert-butyl-4,4'-thiodi-m-cresol	96-69-5	$C_{22}H_{30}O_2S$	-	-	-	-	
Diuron	330-54-1	$C_9H_{10}Cl_2N_2O$	-	10	-	-	
Divinyl benzene [DVB]	1321-74-0	$C_6H_4(HC=CH_2)_2$	20	-	-	-	
E							
Endosulfan	115-29-7	$C_9H_6Cl_6O_3S$	-	$0,2^{(IFV)}$	-	-	SKIN

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
Endrin	72-20-8	$C_{12}H_8Cl_6O$	-	0,2	-	-	SKIN
Enflurane	13838-16-9	$CHFClCF_2OCHF_2$	150	-	-	-	
Epichlorohydrin	106-89-8	C_3H_5OCl	-	1	-	-	CARC, SKIN
1,2-Epoxy-4-epoxyethyl-cyclo-hexane	106-87-6	$C_8H_{12}O_2$			See 4-vinyl cyclohexene dioxide		
2,3-Epoxypropyl isopropyl ether	4016-14-2	$C_6H_{12}O_2$			See isopropyl glycidyl ether [IGE]		
Ethanethiol	75-08-1	CH_3CH_2SH			See ethyl mercaptan		
Ethanol [ethyl alcohol]	64-17-5	CH_3CH_2OH	-	-	2000	-	
Ethanolamine	141-43-5	$NH_2CH_2CH_2OH$	6	-	12	-	
Ethyl acetate	141-78-6	$CH_3COOC_2H_5$	800	-	-	-	
Ethyl acrylate	140-88-5	$CH_2=CHCOOC_2H_5$	10	-	30	-	CARC
Ethylamine	75-04-7	$CH_3CH_2NH_2$	10	-	30	-	SKIN
Ethyl amyl ketone	541-85-5	$C_8H_{16}O$	20	-	-	-	
Ethyl benzene	100-41-4	$CH_3CH_2C_6H_5$	40	-	-	-	CARC, SKIN, OTO
Ethyl bromide	74-96-4	CH_3CH_2Br			See bromoethane		
Ethyl butyl ketone	106-35-4	$CH_3CH_2CO(CH_2)_3CH_3$	100	-	150	-	SKIN
Ethyl chloride	75-00-3	CH_3CH_2Cl	200	-	-	-	SKIN
Ethylene chlorohydrin	107-07-3	CH_2ClCH_2OH	-	-	C 2	-	SKIN
Ethylenediamine	107-15-3	$NH_2CH_2CH_2NH_2$	20	-	-	-	
Ethylene dibromide	106-93-4	$BrCH_2CH_2Br$			See 1,2-dibromoethane		
Ethylene dichloride	107-06-2	$ClCH_2CH_2Cl$			See 1,2-dichloroethane		
Ethylene glycol	107-21-1		50(V)	-	100(V)	20(H)	SKIN

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m^3	OEL-STEL/C ppm	OEL-STEL/C mg/m^3	NOTATIONS
Ethylene glycol dinitrate [EGDN]	628-96-6	$O_2NOCH_2CH_2ONO_2$	0,1	-	-	-	SKIN
Ethylene glycol methyl ether	109-86-4	$CH_3OCH_2CH_2OH$	0,2	-	-	-	
Ethylene glycol monomethyl ether acetate [EGMEA]	110-49-6	$CH_3COOCH_2CH_2OCH_3$	0,2	-	-	-	SKIN
Ethyleneimine	151-56-4	CH_2NHCH_2	0,1	-	0,2	-	CARC, SKIN
Ethyl ether [diethyl ether]	60-29-7	$C_2H_5OC_2H_5$	800	-	1000	-	
Ethyl formate	109-94-4	CH_3CH_2OCHO	-	-	200	-	
Ethylidene dichloride	75-34-3	CH_3CHCl_2	-	-	See 1,1Dichloroethane	-	
Ethyl mercaptan	75-08-1	CH_3CH_2SH	1	-	-	-	
4-Ethylmorpholine [N-ethylmorpholine]	100-74-3	$C_4H_8ONCH_2CH_3$	10	-	-	-	SKIN
Ethyl silicate F	78-10-4	$Si(OC_2H_5)_4$	20	-	-	-	
Fenchlorphos	299-84-3	$(CH_3O)_2PSOC_6H_2Cl_3$	-	10	-	-	
Ferbam	14484-64-1	$[(CH_3)_2NCSS]_3Fe$	-	10[(i)]	-	-	
Ferrocene	102-54-5	$(C_5H_5)_2Fe$			See dicyclopentadienyl iron		
Fluorides [inorganic as F]	16984-48-8	F	-	5	-	-	
Fluorine	7782-41-4	F_2	0,2	-	C 1	-	
Formamide	75-12-7	$HCONH^2$	2	-	-	-	SKIN
Formic acid	64-18-6	HCOOH	10	-	20	-	
Furfural [2-furaldehyde]	98-0101	$C_5H_4O_2$	0,4	-	-	-	SKIN
Furfuryl alcohol	98-00-0	$OCH=CHCH=CCH_2OH$	0,4	-	30	-	SKIN

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
G							
Germanium tetrahydride [germane]	7782-65-2	GeH_4	0,4	-	-	-	
Glutaraldehyde	111-30-8	$OCH(CH_2)_3CHO$	-	-	C 0,1	-	DSEN, RSEN
Graphite, natural and synthetic	7782-42-5	C	-	4(R)	-	-	
Guthion	86-50-0	$C_{10}H_{12}O_3PS_2N_3$		0,2	0,6	-	SKIN
H							
Hafnium	7440-58-6	Hf	-	1	-	-	
Halothane	151-67-7	$CF_3CHClBr$	100	-	-	-	
Heptachlor and	76-44-8,	$C_{10}H_5Cl_7$	-	0,1	-	-	CARC, SKIN
heptachlor epoxide	1024-57-3						
Heptane, all isomers	142-82-5, 590-35-2, 565-59-3, 108-08-7, 591-76-4, 589-34-4	$CH_3(CH_2)_5CH_3$ (for n-heptane)	800	-	1000	-	
Heptan-3-one	106-35-4	$CH_3CH_2CO(CH_2)_3CH_3$			See ethyl butyl ketone		
Hexachloroethane vapour	67-72-1		2	-	-	-	CARC, SKIN
Hexahydro-1,3,5-trinitro-1,3,5-triazine	121-82-4	$C_3H_6N_6O_6$	-	1,5	-	3	SKIN
Hexamethylene diisocyanate [HDI]	822-06-0	$OCN(CH_2)_6NCO$	0,01	-	-	-	
Hexane, all isomers except n-hexane	75-83-2, 79-29-8, 96-14-0,	C_6H_{14}	1000	-	2000	-	

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m^3	OEL-STEL/C ppm	OEL-STEL/C mg/m^3	NOTATIONS
	107-83-5						
n-Hexane	110-54-3	$CH_3(CH_2)_4CH_3$	100	-	-	-	SKIN
2-Hexanone [hexan-2-one]	591-78-6	$CH_3CO(CH_2)_3CH_3$			See methyl-n-butyl ketone		
Hexone	108-10-1	$CH_3COCH_2CH(CH_3)_2$			See methyl isobutyl ketone [MIBK]		
sec-Hexyl acetate	108-84-9	$C_8H_{16}O_2$			See 1,3-dimethylbutyl acetate		
Hexylene glycol	107-41-5	$C_6H_{14}O_2$	50$^{(V)}$	-	100$^{(V)}$	20$^{(I, H)}$	
Hydrazine [diamine]	302-01-2	H_2NNH_2	0,02	-	-	-	CARC, SKIN
Hydrogen bromide	10035-10-6	HBr	-	-	C 4	-	
Hydrogen chloride (gas and aerosol mists)	7647-01-0	HCl	-	-	C 4	-	
Hydrogen fluoride [as F]	7664-39-3	HF	1	-	4	-	CARC, SKIN
Hydrogen peroxide	7722-84-1	H_2O_2	2	-	-	-	
Hydrogen selenide [as Se]	7783-07-5	H_2Se	0,1	-	-	-	
Hydrogen sulphide	7783-06-4	H_2S	2	-	10	-	
Hydroquinone	123-31-9	$C_6H_4(OH)_2$	-	2	-	-	DSEN
2-Hydroxypropyl acrylate [Propylene glycol monoacrylate]	999-61-1	$C_6H_{10}O_3$	1	-	-	-	DSEN, SKIN
I							
Indene [Indonaphthene]	95-13-6	C_9H_8	10	-	-	-	
Indium and compounds [as In]	7440-74-6	In	-	0.2	-	-	CARC (indium phosphide)
Iodine	7553-56-2	I_2	0,02$^{(IFV)}$	-	0,2$^{(V)}$	-	

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
Iodoform	75-47-8	CHI_3	1,2	-	-	-	
Iodomethane	74-88-4	CH_3I	4	-	-	-	SKIN
Iron oxide fume [as Fe]	1309-37-1	Fe_2O_3	-	10(R)	-	-	
Iron pentacarbonyl [as Fe]	13463-40-6	$Fe(CO)_5$	0,2	-	0,4	-	
Iron salts [as Fe]	-	-	-	2	-	-	
Isoamyl alcohol	123-51-3	$(CH_3)_2CHCH_2CH_2OH$	200	-	250	-	
Isobutanol [isobutyl alcohol]	78-83-1	$(CH_3)_2CHCH_2OH$	100	-	-	-	
Isooctyl alcohol	26952-21-6	$C_8H_{17}OH$	100	-	-	-	SKIN
Isophorone	78-59-1	$C_9H_{14}O$	-	-	C 10	-	
Isophorone diisocyanate [IPDI]	4098-71-9	$C_{12}H_{18}N_2O_2$	0,01	-	-	-	
Isopropyl acetate	108-21-4	$CH_3COOCH(CH_3)_2$	200	-	400	-	
Isopropyl benzene	98-82-8	$C_6H_5CH(CH_3)_2$			See cumene		
Isopropyl ether	108-20-3	$(CH_3)_2CHOCH(CH_3)_2$	500	-	620	-	
Isopropyl glycidyl ether [IGE]	4016-14-2	$C_6H_{12}O_2$	100	-	150	-	
K							
Ketene	463-51-4	$CH_2=CO$		-	C 0.1	-	
L							
Liquefied petroleum gas [LPG]	68476-85-7	Mixture: C_3H_6; C_3H_8; C_4H_{10}; C_4H_8	-	Asphyxiant	-	-	
Lithium hydride	7580-67-8	LiH	-	-	-	C 0,1	
M							
Magnesium oxide [as MgO]	1309-48-4	MgO	-	10	-	-	
Malathion	121-75-5	$C_{10}H_{19}O_6PS_2$	-	2(IFV)	-	-	CARC, SKIN
Maleic anhydride	108-31-6	$C_4H_2O_3$	-	0,02(IFV)	-	-	DSEN, RSEN
Manganese	7439-96-5	Mn					

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m^3	OEL-STEL/C ppm	OEL-STEL/C mg/m^3	NOTATIONS
inorganic compounds [as Mn]	-	-	-	0,2[I]	-	-	
elemental	-	-	-	0,04[R]	-	-	
Manganese cyclopentadienyl tricarbonyl [as Mn]	12079-65-1	$C_5H_5Mn(CO)_3$	-	0,2	-	-	SKIN
Mercaptoacetic acid	68-11-1	$HSCH_2COOH$	2	-	-	-	SKIN
Mercury and divalent inorganic mercury compounds, including mercuric oxide and mercuric chloride [as Hg]	7439-97-6	Hg					
Alkyl compounds			-	0,02	-	0,06	CARC, SKIN
Aryl compounds			-	0,2	-	-	SKIN
Elemental and inorganic forms			-	0,05	-	-	SKIN
Mesityl oxide	141-79-7	$(CH_3)_2C=CHCOCH_3$	30	-	50	-	
Methacrylic acid	79-41-4	$CH_2=C(CH_3)COOH$	40	-	-	-	
Methanol [methyl alcohol]	67-56-1	CH_3OH	400	-	500	-	SKIN
Methomyl	16752-77-5	$C_5H_{10}N_2O_2S$	-	0,4[IFV]	-	-	SKIN
Methoxychlor	72-43-5	$(C_6H_4OCH_3)_2CHCCl_3$	-	10	-	-	
1-Methoxypropan-2-ol	107-98-2	$CH_3CHOHCH_2OCH_3$			See propylene glycol monomethyl ether		
Methyl acetate	79-20-9	CH_3COOCH_3	400	-	500	-	
Methyl acrylate	96-33-3	$CH_2=CHCOOCH_3$	4	-	-	-	DSEN, SKIN

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m^3	OEL-STEL/C ppm	OEL-STEL/C mg/m^3	NOTATIONS
Methylacrylonitrile [methacrylonitrile]	126-98-7	$CH_2=C(CH_3)CN$	2	-	-	-	SKIN
Methylal	109-87-5	$CH_2(OCH_3)_2$	2000	-	-	-	
Methylamine	74-89-5	CH_3NH_2	10	-	30	-	
Methyl n-amyl ketone	110-43-0	$CH_3CO(CH_2)_4CH_3$	100	-	-	-	
N-Methylaniline	100-61-8	$C_6H_5NHCH_3$	1	-	-	-	SKIN
Methyl bromide	74-83-9	CH_3Br	2	-	-	-	SKIN
Methyl-n-butyl ketone	591-78-6	$CH_3CO(CH_2)_3CH_3$	10	-	20	-	SKIN
Methyl chloride	74-87-3	CH_3Cl	100	-	200	-	SKIN
Methyl chloroform	71-55-6	CH_3CCl_3			See 1,1,1-trichloroethane		
Methyl 2-cyanoacrylate	137-05-3	$CH_2=C(CN)COOCH_3$	0,4	-	-	-	
Methyl ethyl ketone [MEK]	78-93-3	$CH_2COC_2H_5$	400	-	600	-	SKIN
Methylcyclohexane	108-87-2	$CH_3C_6H_{11}$	800	-	-	-	
Methylcyclohexanol	25639-42-3	$CH_3C_6H_{10}OH$	100	-	-	-	
2-Methylcyclohexanone	583-60-8	$CH_3CHCO(CH_2)_3CH_2$	100	-	150	-	SKIN
Methylene bis(4-cyclohexylisocyanate)	5124-30-1	$CH_2[(C_6H_{10})NCO]_2$	0,01	-	-	-	
Methylcyclopentadienyl manganese tricarbonyl [as Mn]	12108-13-3	$CH_3C_5H_4Mn(CO)_3$	-	0,4	-	-	SKIN
4,4'-Methylenebis(2-chloroaniline) [MbOCA]	101-14-4	$CH_2(C_6H_4ClNH_2)_2$			See 2,2'-dichloro-4,4'-methylene dianiline [MbOCA]		
Methylene chloride	75-09-2				See dichloromethane		

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
4,4'-Methylenedianiline [MDA]	101-77-9	$CH_2(C_6H_4NH_2)_2$	0,2	-	-	-	
4,4'-Methylene-diphenyl diisocyanate [MDI]	101-68-8	$CH_2(C_6H_4NCO)_2$	0,01	-	-	-	
Methyl formate	107-31-3	$HCOOCH_3$	100	-	200	-	SKIN
Methyl hydrazine	60-34-4	CH_3NHNH_2	0,02	-	-	-	SKIN
Methyl iodide	74-88-4	CH_3I			See iodomethane		
Methyl isoamyl ketone	110-12-3	C7H14O	40	-	100	-	SKIN
Methyl isobutyl carbinol [4-Methylpentan-2-ol]	108-11-2	C6H14O	40	-	80	-	SKIN
Methyl isobutyl ketone [MIBK]	108-10-1	$CH_3COCH_2CH(CH_3)_2$	40	-	150	-	CARC, SKIN
Methyl isocyanate [MIC]	624-83-9	CH_3NCO	0,04	-	0,12	-	DSEN, RSEN, SKIN
Methyl mercaptan	74-93-1	CH_3SH	1	-	-	-	
Methyl methacrylate	80-62-6	$CH_2=C(CH_3)COOCH_3$	100	-	200	-	DSEN
Methyl parathion	298-00-0	$C_8H_{10}NO_5PS$	-	$0,04^{(IFV)}$	-	-	SKIN
Methyl propyl ketone	107-87-9	$CH_3(CH_2)_2COCH_3$	-	-	300	-	
Methyl silicate	681-84-5	$(CH_3O)_4Si$	2	-	-	-	
alpha-Methyl styrene	98-83-9	$C_6H_5C(CH_3)=CH_2$	20	-	-	-	CARC
Mevinphos	7786-34-7	$C_7H_{13}PO_6$			See phosdrin		
Mica	12001-26-2		-	$0,2^{R)}$	-	-	
Molybdenum compounds [as Mo]'	7439-98-7	Mo					
Soluble compounds	-	-	-	$1^{(R)}$	-	-	
Metal and insoluble compounds, total particulate	-	-	-	10	-	-	

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
Metal and insoluble compounds	-	-	-	5(R)	-	-	
Monochloroacetic acid	79-11-8	$ClCH_2CO_2H$	1(IFV)	-	-	-	SKIN
Morpholine	110-91-8	C_4H_9NO	40	-	-	-	SKIN
Naled	300-76-5	$C_4H_7Br_2Cl_2O_4P$	-	0,2(IFV)	-	-	DSEN, SKIN
Naphthalene	91-20-3	$C_{10}H_8$	20	-	-	-	CARC, SKIN
Nickel and its inorganic compounds [as Ni]	7440-02-0						
Elemental			-	3	-	-	CARC, SKIN
Nickel carbonyl [as Ni]	13463-39-3	$Ni(CO)_4$	-	-	C 0,1	-	CARC
Nickel, subsulphide [as Ni]	12035-72-2	Ni_3S_2	-	0,2	-	-	CARC
Nicotine	54-11-5	$C_{10}H_{14}N_2$	-	1	-	-	SKIN
Nitrapyrin	1929-82-4	$ClC_5H_3NCCl_3$	-	10(IFV)	-	20(IFV)	
Nitric acid	7697-37-2	HNO_3	4	-	8	-	
Nitric oxide	10102-43-9	NO			See nitrogen monoxide		
4-Nitroaniline [p-nitroaniline]	100-01-6	$NO_2C_6H_4NH_2$	-	6	-	-	SKIN
Nitrobenzene	98-95-3	$C_6H_5NO_2$	2	-	-	-	CARC, SKIN
p-Nitrochlorobenzene	100-00-5	$ClC_6H_4NO_2$	0,2	-	-	-	
Nitroethane	79-24-3	$C_2H_5NO_2$	200	-	-	-	
Nitrogen monoxide	10102-43-9	NO	50	-	-	-	
Nitrogen dioxide	10102-44-0	NO_2	0,4	-	-	-	
Nitrogen trifluoride	7783-54-2	NF_3	20	-	-	-	
Nitroglycerine [NG]	55-63-0	$_2NO_3CHNO_3CH_2NO_3$	0,1	-	-	-	SKIN
Nitromethane	75-52-5	CH_3NO_2	40	-	-	-	CARC
1-Nitropropane	108-03-2	$C_3H_7NO_2$	50	-	-	-	
2-Nitropropane	79-46-9	$(CH_3)_2CH(NO_2)$	20	-	-	-	CARC

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
Nitrotoluene, all isomers	88-72-2; 99-08-1; 99-99-0	$CH_3C_6H_4NO_2$	4	-	-	-	SKIN
Nitrous oxide	10024-97-2	N_2O	100	-	-	-	
O							
Octachloronaphthalene	2234-13-1	$C_{10}Cl_8$	-	0,2	-	0,6	SKIN
Osmium tetroxide [as Os]	20816-12-0	OsO_4	0,0004	-	0,0012	-	
Oxalic acid	144-62-7	$COOHCOOH.2H_2O$	-	2	-	4	
Ozone	10028-15-6	O_3					
Heavy work			0,1	-	-	-	
Moderate work			0,16	-	-	-	
Light work			0,2	-	-	-	
Heavy, moderate or light workloads (< 2hrs)			0,4	-	-	-	
P							
Paraffin wax fume	8002-74-2	-	-	4	-	-	
Parathion	56-38-2	$(C_2H_5O)_2PSOC_6H_4NO_2$	-	0,1 (IFV)	-	-	CARC, SKIN
Particles not otherwise specified [PNOS]	-	-					
Total particulate	-	-	-	10	-	-	
	-	-	-	5 (R)	-	-	
Pentachlorophenol	87-86-5	C_6Cl_5OH	-	1 (IFV)	-	2	CARC, SKIN
Pentaerythritol	115-77-5		-	10	-	-	
Pentane, all isomers	78-78-4; 109-66-0; 463-82-1	C_5H_{12}	2000	-	-	-	
Pentyl acetate, all isomers	628-63-7; 626-38-0; 123-92-2;	$CH_3COO(CH_2)_4CH_3$	100	-	200	-	

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
	625-16-1; 624-41-9; 620-11-1						
Perchloryl fluoride	7616-94-6	$ClFO_3$	1	-		-	
Persulphates, as persulfate		SO_5/S_2O_8	-	0,2	-	-	
Phenol	108-95-2	C_6H_5OH	10	-	-	-	SKIN
p-Phenylenediamine	106-50-3	$C_6H_4(NH_2)_2$	-	0,2	-	-	SKIN
Phenyl ether	101-84-8	$C_6H_5OC_6H_5$	2(V)	-	4	-	
Phenyl glycidyl ether [PGE]	122-60-1	$C_6H_5OCH_2CHOCH_2$	0,2	-	-	-	CARC, DSEN, SKIN
Phenylhydrazine	100-63-0	$C_6H_5NHNH_2$	0,2	-	-	-	SKIN
Phenyl mercaptan	108-98-5	C_6H_5SH	0,2	-	-	-	SKIN
2-Phenylpropene	98-83-9	$C_6H_5C(CH_3)=CH_2$			See alpha-methyl styrene		
Phorate	298-02-2	$C_7H_{17}O_2PS_3$	-	0,1(IFV)	-	-	SKIN
Phosdrin	7786-34-7	$C_7H_{13}PO_6$	-	0,02(IFV)	-	-	SKIN
Phosgene	75-44-5	$COCl_2$	0,2	-	-	-	
Phosphine	7803-51-2	PH_3	0,1	-	C 0,3	-	
Phosphoric acid	7664-38-2	H_3PO_4	-	2	-	6	
Phosphorus oxychloride	10025-87-3	$POCl_3$	0,2	-	-	-	
Phosphorus pentachloride	10026-13-8	PCl_5	0,2	-	-	-	
Phosphorus pentasulphide	1314-80-3	P_2S_5/P_4S_{10}	-	2	-	6	
Phosphorus trichloride	7719-12-2	PCl_3	0,4	-	1	-	
Phthalic anhydride	85-44-9	$C_6H_4(CO)_2O$	0,004(IFV)	-	0,01	-	DSEN, RSEN
Picloram	1918-02-1	$C_6H_3Cl_3N_2O_2$	-	10	-	-	
Picric acid	88-89-1	$(NO_2)_3C_6H_2OH$	-	0,2	-	-	
Piperazine and salts [as Piperazine]	110-85-0	$C_4H_{10}N_2$	0,06(IFV)	-	-	-	DSEN, RSEN
Platinum							

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
Metal	7440-06-4	Pt	-	1	-	-	
Soluble salts [as Pt]	-	-	-	0,002	-	-	DSEN, RSEN
Polyvinyl chloride [PVC]	-	-	-	2(R)	-	-	
Potassium hydroxide	1310-58-3	KOH	-	-	-	C 4	
n-Propanol [n-propyl alcohol]	71-23-8	$CH_3CH_2CH_2OH$	200	-	-	-	SKIN
2-Propanol [propan-2-ol]	67-63-0	$(CH_3)_2CHOH$	400	-	800	-	
Propargyl alcohol [2-propyn-1-ol]	107-19-7	$HC{\equiv}CCH_2OH$	2	-	-	-	SKIN
Propionic acid	79-09-4	CH_3CH_2COOH	20	-	-	-	
Propoxur	114-26-1	$C_{11}H_{15}NO_3$	-	1(IFV)	-	-	
n-Propyl acetate	109-60-4	$CH_3COOC_3H_7$	200	-	300	-	
Propylene glycol dinitrate [PGDN]	6423-43-4	$I_3CHONO_2CH_2ONO_2$	0,1	-	-	-	SKIN
Propylene glycol monomethyl ether	107-98-2	$CH_3CHOHCH_2OCH_3$	100	-	200	-	SKIN
Pyrethrum	8003-34-7	-	-	10	-	-	
Pyridine	110-86-1	C_5H_5N	2	-	-	-	
Pyrocatechol	120-80-9	$C_6H_4(OH)_2$	5	20	-	-	
Q							
Quinone	106-51-4	C6H4O2			See p-benzoquinone		
Quintozene	82-68-8	$C_6Cl_5NO_2$			See pentachloronitrobenzene		
R							
Resorcinol	108-46-3	$C_6H_4(OH)_2$	20	-	40	-	SKIN

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
Resin acids (as total Resin acid)	8050-09-07			0.002			
Rhodium							
Metal and insoluble compounds [as Rh]	7440-16-6	Rh	-	2	-	-	
Soluble compounds [as Rh]			-	0,02	-	-	DSEN
Rosin core solder thermal decomposition products [colophony]	8050-09-07	-	Exposure by all routes should be carefully controlled to ALARP				
S							
Selenium and compounds, except hydrogen selenide [as Se]	7782-49-2	Se	-	0,4	-	-	
Silicon carbide	409-21-2	SiC					
Total particulate (nonfibrous)	-	-	-	$10^{(I, E)}$	-	-	CARC
Respirable particulate (nonfibrous)	-	-	-	$5^{(R)}$	-	-	CARC
Fibrous (including whiskers)			-	0,1 f/ml$^{(F)}$	-	-	CARC
Silicon tetrahydride [silane]	7803-62-5	SiH_4	10	-	-	-	
Silver							
Metal	7440-22-4	Ag	-	0,2	-	-	
Soluble compounds [as Ag]	-	-	-	0,02	-	-	
Sodium azide	26628-22-8	NaN_3	-	-	-	C 0,6	SKIN

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m^3	OEL-STEL/C ppm	OEL-STEL/C mg/m^3	NOTATIONS
Sodium 2,4-dichlorophenoxy ethyl sulphate [2,4-DES], [sesone]	136-78-7	$C_8H_7Cl_2NaO_5S$	-	10	-	-	CARC
Sodium fluoroacetate	62-74-8	$CH_2FCOONa$	-	0,1	-	-	SKIN
Sodium hydrogen sulphite [sodium bisulphite]	7631-90-5	$NaHSO_3$	-	10	-	-	
Sodium hydroxide	1310-73-2	NaOH	-	-	-	C 4	
Sodium metabisulphate	7681-57-4	$Na_2S_2O_5$	-	10	-	-	
Starch	9005-25-8	-	-	10	-	-	
Stibine [antimony hydride]	7803-52-3	SbH_3	0,2	-	-	-	
Strychnine	57-24-9	$C_{21}H_{22}N_2O_2$	-	0,3	-	-	
Subtilisins (Proteolytic enzymes as 100% crystalline active pure enzyme)	1395-21-7, 9014-01-1	-	-	-	-	0,00012	RSEN
Sucrose	57-50-1	$C_{12}H_{22}O_{11}$	-	10	-	-	
Sulfotep	3689-24-5	$[(CH_3CH_2O)_2PS]_2O$	-	0,2$^{(IFV)}$	-	-	SKIN
Sulphur dioxide	7446-09-5	SO_2	-	-	0,5	-	
Sulphur hexafluoride	2551-62-4	SF_6	2000	-	-	-	
Sulphuric acid (mist)	7664-93-9	H_2SO_4	-	0,4$^{(T)}$	-	-	CARC
Sulphur monochloride	10025-67-9	S_2Cl_2	-	-	C 2	-	
Sulphur pentafluoride	5714-22-7	S_2F_{10}	-	-	C 0,02	-	
Sulphur tetrafluoride	7783-60-0	SF_4	-	-	C 0,2	-	
Sulphuryl fluoride [sulphuryl difluoride]	2699-79-8	SO_2F_2	10	-	20	-	
Synthetic vitreous fibres [SVF]:	-	-					

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
Continuous filament glass fibres	-	-	-	2 f/ml(F)	-	-	
Continuous filament glass fibres			-	10	-	-	
Glass wool fibres	-	-	-	2 f/ml(F)	-	-	
Rock wool fibres	-	-	-	2 f/ml(F)	-	-	
Slag wool fibres	-	-	-	2 f/ml(F)	-	-	
Special purpose glass fibres			-	2 f/ml(F)	-	-	
Refractory ceramic fibres	-	-	-	0,4 f/ml(F)	-	-	CARC
T							
Talc (containing no asbestos fibres)	14807-96-6	$Mg_3Si_4O_{10}(OH)_1$	-	4(E, R)	-	-	
Tellurium and compounds, except hydrogen telluride [as Te]	13494-80-9	Te	-	0,2	-	-	
Terphenyls, all isomers	26140-60-3	$C_{18}H_{14}$	-	-	-	10	
1,1,2,2-Tetrabromoethane	79-27-6	$CHBr_2CHBr_2$	0,2	-	-	-	SKIN
Tetracarbonyl nickel [as Ni]	13463-39-3	$Ni(CO)_4$			See nickel carbonyl		
1,1,2,2-Tetrachloro-1,2-difluoroethane	76-12-0	CCl_2FCCl_2F	100	-	-	-	
1,1,1,2-Tetrachloro-2,2-difluoroethane	76-11-9	CCl_3CClF_2	200	-	-	-	
Tetrachloroethylene	127-18-4	$Cl_2C=CCl_2$	50	-	200	-	
Tetrachloronaphthalene	1335-88-2	$C_{10}H_4Cl_4$	-	4	-	-	
Tetraethyl Lead (as Pd)	78-00-2				See Lead Regulations		
Tetraethyl orthosilicate	78-10-4	Si(OC2H5)4			See ethyl silicate		

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
Tetraethyl pyrophosphate [TEPP]	107-49-3	$[(CH_3CH_2O)_2PO]_2O$	-	0,02(IFV)	-	-	SKIN
Tetrahydrofuran	109-99-9	C_4H_8O	100	-	200	-	SKIN
Tetramethyl Lead (as Pd)	75-74-1				See Lead Regulations		
Tetramethyl succinonitrile	3333-52-6	$C_8H_{12}N_2$	1(IFV)	-	-	-	SKIN
Tetryl	479-45-8	$O^2)^3C^6H^2N(NO^2)CH^3$	-	3	-	-	
Thallium, soluble compounds [as Tl]	-	Tl	-	0,04	-	-	SKIN
4,4'-Thiobis(6-tert-butyl-m-cresol)	96-69-5	$C_{22}H_{30}O_2S$	-	2	-	-	
Thioglycolic acid	68-11-1	$HSCH_2COOH$			See mercaptoacetic acid		
Thionyl chloride	7719-09-7	$SOCl_2$	-	-	C 0,4	-	
Thiram	137-26-8	$-I_3)_2NCS_2CS_2N(CH_3)_2$	-	0,1(IFV)	-	-	DSEN
Tin compounds:		-					
Tin metal	7440-31-5	-	-	4	-	-	
Tin oxide and inorganic, except SnH_4 [as Sn]		-	-	4	-	-	SKIN
Organic except cyhexatin [as Sn]	-	-	-	0,2	-	-	SKIN
Titanium dioxide	13463-67-7	-	-	10		-	CARC
Toluene	108-88-3	$C_6H_5CH_3$	40	-	-	-	SKIN, OTO
2,4-Toluene diisocyanate [TDI]	584-84-9	$CH_3C_6H_3(NCO)_2$	0,002(IFV)	-	0,01(IFV)	-	
o-Toluidine	95-53-4	$CH_3C_6H_4NH_2$	4	-	-	-	CARC, SKIN
m-Toluidine	108-44-1	$CH_3C_6H_4NH_2$	4	-	-	-	SKIN
p-Toluidine	106-49-0	$CH_3C_6H_4NH_2$	4	-	-	-	SKIN

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
Tribromomethane	75-25-2	$CHBr_3$			See bromoform		
Tributyl phosphate, all isomers	126-73-8	$(C_4H_9)_3PO_4$	-	$10^{(IFV)}$	-	-	
Trichloroacetic acid	76-03-9	CCl_3COOH	1	-	-	-	CARC
1,2,4-Trichlorobenzene	120-82-1	$C_6H_3Cl_3$	-	-	C 10	-	SKIN
1,1,2-Trichloroethane	79-00-5	$CHCl_2CH_2Cl$	20	-	-	-	SKIN
Trichlorofluoromethane	75-69-4	CCl_3F	-	-	2000	-	
Trichloronitromethane	76-06-2	CCl_3NO_2			See chloropicrin		
2,4,5-Trichlorophenoxyacetic acid [2,4,5-T]	93-76-5	$Cl_3C_6H_2OCH_2COOH$	-	10	-	-	CARC
1,2,3-Trichloropropane	96-18-4	$CH_2ClCHClCH_2Cl$	0,01	-	-	-	CARC
1,1,2-Trichlorotrifluoroethane [1,1,2-trichloro-1,2,2-trifluoroethane]	76-13-1	CCl_2FCClF_2	2000	-	2500	-	
Tri-o-cresyl phosphate [Tri-o-tolyl phosphate]	78-30-8	$(CH_3C_6H_4O)_3P=O$	-	0,04	-	-	SKIN
Tricyclohexyltin hydroxide	13121-70-5	$(C_6H_{11})_3SnOH$			See cyhexatin		
Triethanolamine	102-71-6	$(CH_2OHCH_2)_3N$	-	10	-	-	
Triethylamine	121-44-8	$(C_2H_5)_3N$	1	-	2	-	SKIN
Trifluorobromomethane	75-63-8	CF_3Br	2000	-	-	-	
Trimellitic anhydride	552-30-7	$C_9H_4O_5$			See benzene-1,2,4,-tricarboxylic acid 1,2-anhydride		
Trimethylamine	75-50-3	$(CH_3)_3N$	10	-	30	-	

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m³	OEL-STEL/C ppm	OEL-STEL/C mg/m³	NOTATIONS
Trimethylbenzene, all isomers or mixtures	25551-13-7	$C_6H_3(CH_3)_3$	50	-	-	-	
Trimethyl phosphite	121-45-9	$(CH_3O)_3P$	4	-	-	-	
2,4,6-Trinitrotoluene [TNT]	118-96-7	$CH_3C_6H_2(NO_2)_3$	-	0,2	-	-	SKIN
Triphenyl phosphate	115-86-6	$(C_6H_5O)_3PO_4$	-	6	-	-	SKIN
Tungsten and compounds, in the absence of cobalt, as W	7440-33-7			$5^{(R)}$			
Turpentine	8006-64-2	$C_{10}H_{16}$ (approx.)	40	-	-	-	
U							
Uranium (natural), soluble and insoluble compounds [as U]	7440-61-1	-	-	0,4	-	1,2	
V							
Vanadium pentoxide	1314-62-1	V_2O_5	$0,1^{(I)}$	-	-	-	CARC
Vinyl acetate	108-05-4	$CH_2=CHOOCCH_3$	20	-	30	-	CARC
Vinyl benzene	100-42-5	$C_6H_5CH=CH_2$			See styrene, monomer		
Vinyl bromide	593-60-2	$CH_2=CHBr$	1	-	-	-	CARC
4-Vinyl cyclohexene	100-40-3	C_8H_{12}	0,2	-	-	-	CARC
4-Vinyl cyclohexene dioxide	106-87-6	$C_8H_{12}O_2$	0,2	-	-	-	CARC, SKIN
Vinyl toluene	25013-15-4	$CH_2=CHC_6H_4CH_3$	100	-	200	-	
W							
Warfarin	81-81-2	$C_{19}H_{16}O_4$	-	$0,02^{(I)}$	-	-	SKIN
Wood dust, all species, excluding oak, beech, birch,	-		-	5	-	-	CARC, RSEN

AGENT	CAS NUMBER	FORMULA	OEL eight-hour TWA ppm	OEL eight-hour TWA mg/m^3	OEL-STEL/C ppm	OEL-STEL/C mg/m^3	NOTATIONS
mahogany, teak and walnut							
X							
Xylene, o-, m-, p- or mixed isomers	1330-20-7	$C_6H_4(CH_3)_2$	200	-	300	-	SKIN, OTO
Xylidine, all isomers	1300-73-8	$(CH_3)_2C_6H_3NH_2$	1$^{(IFV)}$	-	-	-	CARC, SKIN
Y							
Yttrium and compounds [as Y]	7440-65-5	Y	-	2	-	-	
Z							
Zinc chloride, fume	7646-85-7	$ZnCl_2$	-	2	-	4	
Zinc oxide, fume	1314-13-2	ZnO	-	4$^{(R)}$	-	20$^{(R)}$	
Zirconium compounds [as Zr]	7440-67-7	Zr	-	10	-	20	

Abbreviations:

ALARP: as low as reasonable practicable

OEL eight-hour TWA: occupational exposure limit – eight-hour time-weighted average

OEL-RL: occupational exposure limit – restricted limit

OEL-STEL/C: occupational exposure limit – short-term exposure limit, ceiling limit Ceiling limit is differentiated by a **C** next to the limit

Notations:

CARC: denotes carcinogenicity, which is based on GHS categorisation, including category 1A, 1B;

DSEN: dermal sensitisation, potential to produce dermal sensitisation;

E: the value is for particulate matter containing no asbestos and ≤ 1% crystalline silica;

F: respirable fibres: length> 5 µm; aspect ratio ≥ 3:1 as determined by the membrane filter method at 400-450X magnification (4mm objective), using phase-contrast illumination;

H: aerosol only;

I: inhalable fraction;
IFV: inhalable fraction and vapour;
Inhalable particulate matter (IPM): for those materials that are hazardous when deposited anywhere in the respiratory tract;
OTO: Ototoxicant
R: respirable fraction;
RSEN: respiratory sensitisation, potential to produce respiratory sensitisation;
SKIN: danger of cutaneous absorption – refers to the potential significant contribution to the overall exposure by the cutaneous route, including mucous membranes and the eyes by contact with vapours, liquids and solids; overexposure may also occur following dermal contact with liquids and aerosols, even when airborne exposures at or below the OEL;
T: thoracic fraction; and
V: vapour fraction.

RSEN and DSEN do not imply that sensitisation is the critical effect on which the OEL is based, nor do they imply that this effect is the sole basis for the agent's OEL.

Note:
*All industries handling, manufacturing and producing silica dust are required to submit biennial reports that include the information on Annexure 3.

Table 4: BIOLOGICAL EXPOSURE INDICES (BEIs) FOR HAZARDOUS CHEMICAL AGENTS

AGENT/DETERMINANT	CAS NUMBER	SAMPLE MATRIX	SAMPLING TIME	VALUE	UNIT	NOTATION
A						
Acetone	**67-64-1**					
Acetone		urine	End of shift	25	mg/L	Ns
Acrylamide	**76-06-1**					
N-(2- Carbomoylethyl) valine		blood	Not critical	500	pmol/g	B
S-(Carbomoylethyl) mercapturic acid		urine		800	µg/g creatinine	B
Acetylcholinesterase inhibitors						
Cholinesterase inhibiting pesticides		blood	Discretionary	70	% of baseline	Ns
Aniline	**62-53-3**					
		urine	End of shift	50	mg/L	B, Ns, Sq
Arsenic, elemental and soluble inorganic compounds (excluding gallium arsenide and arsine)	**7440-38-2**					
Inorganic arsenic plus methylated metabolites		urine	End of workweek	35	µg/L	B
B						
Benzene	**71-43-2**					
S-phenylmercapturic acid (SPMA)		urine	End of shift	25	µg/g creatinine	B
t,t-Muconic acid (ttMA)		urine	End of shift	500	µg/g creatinine	B
1,3-Butadiene	**106-99-0**					

AGENT/DETERMINANT	CAS NUMBER	SAMPLE MATRIX	SAMPLING TIME	VALUE	UNIT	NOTATION
1,2-Dihydroxy-4-(N-acetylcysteinyl)-butane		urine	End of shift	2,5	mg/L	B, Sq
Mixture of N-1-and N-2-(hydroxybutenyl)valine haemoglobin adducts		blood	Not critical	2,5	pmol/g Hb	Sq
2-Butoxyethanol	**111-76-2**					
Butoxyacetic acid (BAA)		urine	End of shift	200	mg/g creatinine	-
C						
Cadmium and inorganic compounds	**7440-43-9**					
Cadmium		urine	Not critical	5	µg/g creatinine	B
Cadmium		blood	Not critical	5	µg/L	B
Carbon disulphide	**75-15-0**					
2-thiothiazolidine-4-carboxlyic acid (TTCA)		urine	End of shift	0,5	mg/g creatinine	B, Ns
Carbon monoxide	**630-08-0**					
Carboxyhaemoglobin		blood	End of shift	3,5	% haemoglobin	B, Ns
Carbon monoxide		end exhaled	End of shift	20	ppm	B, Ns
Chlorobenzene	**108-90-7**					
4-Chlorocatechol		urine	End of shift at end of workweek	100	mg/g creatinine	Ns
p-Chlorophenol		urine	End of shift at end of workweek	20	mg/g creatinine	Ns
Chromium (water-soluble fume)	**7440-47-3**					
Total chromium		urine	End of shift at end of workweek	0.7	µg/L	-
						-

AGENT/DETERMINANT	CAS NUMBER	SAMPLE MATRIX	SAMPLING TIME	VALUE	UNIT	NOTATION
Cobalt and inorganic compounds, including cobalt oxides but not combined with tungsten carbide	**7440-48-4**					
Cobalt		urine	End of shift at end of workweek	15	µg/L	Ns
Cyclohexane	**110-82-7**					
1,2- Cyclonhexanediol		urine	End of shift at end of workweek	50	mg/L	Ns
Cyclohexanone	**108-94-1**					
1,2-Cyclohexanediol		urine	End of shift at end of workweek	80	mg/L	Ns, Sq
Cyclohexanol		urine	End of shift	8	mg/L	Ns, Sq
D						
Dichloromethane	**75-09-2**					
Dichloromethane		urine	End of shift	0,3	mg/L	Sq
N,N-Dimethylacetamide	**127-19-5**					
N-Methylacetamide		urine	End of shift at end of workweek	30	mg/g creatinine	-
N,N-Dimethylformamide (DMF)	**68-12-2**					
N-methylformamide		urine	End of shift	30	mg/L	-
N-Acetyl-S-(N-methylcarbamoyl) cysteine Total N-methylformamide represents sum of N-methylformamide and N- (		urine	Prior to last shift of workweek	30	mg/L	Sq

AGENT/DETERMINANT	CAS NUMBER	SAMPLE MATRIX	SAMPLING TIME	VALUE	UNIT	NOTATION
Hydroxymethyl)- N-methylformamide						
E						
2-Ethoxyethanol (EGEE) and 2-Ethoxyethyl acetate (EGEEA)	**110-80-5; 111-15-9**					
2-Ethoxyacetic acid		urine	End of shift at end of workweek	40	mg/g creatinine	-
Ethyl benzene	**100-41-4**					
Sum of mandelic acid and phenylglyoxylic acid		urine	End of shift	0,15	g/g creatinine	Ns
F						
Fluorides	**16984-48-8**					
Fluoride		urine	Prior to shift	2	mg/L	B, Ns
Fluoride		urine	End of shift	3	mg/L	B, Ns
Furfural	**98-01-1**					
Furoic acid		urine	End of shift	200	mg/L	Ns
G						
H						
1,6-Hexamethylene diisocyanate	**822-06-0**					
1,6-Hexamethylene diamine		urine	End of shift	15	µg/g creatinine	Ns
n-Hexane	**110-54-3**					
2,5-Hexanedione		urine	End of shift at end of workweek	0,5	mg/L	-
L						
Lead and Inorganic compounds	**7439-92-1**					

AGENT/DETERMINANT	CAS NUMBER	SAMPLE MATRIX	SAMPLING TIME	VALUE	UNIT	NOTATION
Lead		blood	Not critical	See Lead Regulations		
M						
Mercury (Elemental)	**7439-97-6**					
Mercury		urine	Prior to shift	20	µg/g creatinine	-
Methanol	**67-56-1**					
Methanol		urine	End of shift	15	mg/L	B, Ns
Methemoglobin inducers						
Methemoglobin		blood	During or at end of shift	5	% haemoglobin	B, Ns, Sq
2-Methoxyethanol and 2-Methoxyethylacetate	**109-86-4; 110-49-6**					
2-Methoxyacetic acid		urine	End of shift at end of workweek	1	mg/g creatinine	-
Methyl n-butyl ketone	**591-78-6**					
2,5-Hexanedione		urine	End of shift at end of workweek	0,4	mg/L	-
Methyl chloroform	**71-55-6**					
Methyl chloroform		end exhaled	Prior to last shift of workweek	20	ppm	
Methyl chloroform in urine		urine	End of shift	700	ug/L	Ns, Sq
Methyl Ethyl ketone (MEK)	**78-93-3**					
Methyl ethyl ketone (MEK)		urine	End of shift	2	mg/L	Ns
Methyl isobutyl ketone (MIBK)	**108-10-1**					
Methyl isobutyl ketone (MIBK)		urine	End of shift	1	mg/L	-

AGENT/DETERMINANT	CAS NUMBER	SAMPLE MATRIX	SAMPLING TIME	VALUE	UNIT	NOTATION
N						
Nickel	**7440-02-0**					
Elemental Nickel and poorly soluble compounds		urine	End of shift at end of workweek	5	ug/L	B
Soluble compounds		urine	End of shift at end of workweek	30	ug/L	
Nitrobenzene	**98-95-3**					
Methemoglobin		blood	See methemoglobin inducers BEI			
P						
Parathion	**56-38-2**					
Total p-nitrophenol		urine	End of shift	0,5	mg/g creatinine	Ns
Cholinesterase activity in red blood cells		blood	Discretionary	70	% of baseline	Ns
Phenol	**108-95-2**					
Phenol		urine	End of shift	250	mg/g creatinine	B, Ns
2-Propanol	**67-63-0**					
Acetone		urine	End of shift at end of workweek	40	mg/L	B, Ns
S						
Styrene	**100-42-5**					
Mandelic acid and phenylglyoxylic acid		urine	End of shift	150	mg/g creatinine	Ns
Styrene		urine	End of shift	20	µg/L	-
T						
Tetrachloroethylene (Perchloroethylene)	**127-18-4**					
Tetrachloroethylene		end exhaled	Prior to shift	3	ppm	-
Tetrachloroethylene		blood	Prior to shift	0,5	mg/L	-

AGENT/DETERMINANT	CAS NUMBER	SAMPLE MATRIX	SAMPLING TIME	VALUE	UNIT	NOTATION
Tetrahydrofuran	**109-99-9**					
Tetrahydrofuran		urine	End of shift	2	mg/L	-
Toluene	**108-88-3**					
Toluene		blood	Prior to last shift of workweek	0,02	mg/L	-
Toluene		urine	End of shift	0,03	mg/L	-
o-Cresol		urine	End of shift	0,3	mg/g creatinine	B
Toluene diisocyanate-2,4, or as a mixture of isomers	**584-84-9**					
Toluene diamine		urine	End of shift	5	µg/g creatinine	Ns
Trichloroethylene	**79-01-6**					
Trichloroacetic acid		urine	End of shift at end of workweek	15	mg/L	Ns
Trichloroethanol		blood	End of shift at end of workweek	0,5	mg/L	Ns
U						
Uranium	**7440-61-1**					
Uranium		urine	End of shift	200	µg/L	-
X						
Xylenes	**95-47-6; 106-42-3; 108-38-3; 1330-20-7**					
Methylhippuric acids		urine	End of shift	1,5	g/g creatinine	-

Notations:

B: background

The determinant may be present in biological specimens collected from subjects who have not been occupationally exposed, at a concentration which could affect interpretation of the results. Such background concentrations are incorporated in the BEI value.

Nq: non-quantitative
Biological monitoring should be considered for this compound based on the review; however, a specific BEI could not be determined due to insufficient data.
Ns: non-specific
The determinant is non-specific, since it is also observed after exposure to other chemicals.
Sq: semi-quantitative
The biological determinant is an indicator of exposure to the chemical, but the quantitative interpretation of the measurement is ambiguous. These determinants should be used as a screening test if a quantitative test is not practical or as a confirmatory test if the quantitative test is not specific and the origin of the determinant is in question.

ANNEXURE 3

CRYSTALLINE SILICA EXPOSURE REPORTING TOOL

COMPANY/EMPLOYER DETAILS	
Company registered name	
Company registration number	
Company VAT number	
"Trading as" name	
Name of CEO	
Name of Managing Director	
Company postal address	
Company physical address	
Company contact phone number/s	
APPROVED INSPECTION AUTHORITY	
Name of AIA	
AIA Departmental registration number	
Name and SAIOH registration number of the responsible AIA Technical Signatory	
Sampling methodology used	
Crystalline Silica exposure monitoring	
Physical address where exposure takes place (one notification per site)	
Date of survey	
Short description of process which causes silica exposure	
Materials and sources of exposure	
Describe the area in the production process where the samples were taken	

Does the HCA risk assessment include the assessment of exposure to crystalline silica?	
Does the company have a documented silicosis elimination programme?	(If the answer is yes, please attach a copy)
What is the maximum exposure level (mg/m^2)?	
Number of results <50% of OEL	
Number of results between ≥50%, but < 100% than OEL	
Number of results ≥100% of OEL	
Total number of employees exposed to crystalline silica.	
Number of employees exposed to levels <50% of OEL	
Number of employees exposed to levels ≥50% <100% of OEL	
Number of employees exposed to levels ≥100% of OEL	

Note: Please attach AIA report which this reporting tool is referring to.

Please attach the action plan for the implementation of recommendations made in the AIA report.

This completed report must be submitted to: silicareports.ohh@labour.gov.za **on or before the 31st March each year.**

ANNEXURE 4

HAZARDOUS CHEMICAL AGENT GUIDELINES (*Complete draft guideline available on www.labour.gov.za or on request*)

Guideline Table of Contents:

- Prevention and control of exposure
- Globally Harmonised System (GHS)
- GHS Labelling
- Special labelling arrangements
- Additional SDS (safety data sheet) considerations
- Cut-off values for GHS classification
- Precautionary statements
- Cross reference between carcinogenic classification systems
- UN number and proper shipping name
- GHS Competent authorities

Exposure in mines
Lead and asbestos
Constitution of Similar Exposure Groups (SEGs)
Background to occupational exposure limits
Setting occupational exposure limits
Units of measurement
Occupational exposure limit - maximum limit: OEL-ML (Table 2 of Annexure 2)
Occupational exposure limit - restricted limit: OEL-RL (Table 3 of Annexure 2)
Long-term and short-term exposure limits
Limitations to the application of exposure limits
Calculation of exposure for specified reference periods
The 8-hour reference period
The short-term reference period
Airborne particulates
Particle size selective criteria for sampling of total airborne particulates and respirable particulates
Wood dust
Fumes
Absorption through the skin
Sensitisers
Interaction with physical agents
Mixed exposures
Effects of mixed exposures
Assessment and control
Monitoring mixed exposure
Complicating factors
Monitoring exposure
Methods of measurement and calculation for determining fibre concentrations of synthetic vitreous fibre
Cotton dust
Cotton dust inhalable airborne particulate
Confined Space entry / Toxicity
Compressed Air
Ototoxicant
Pesticides/ Agrochemicals
Simple Asphyxiants
Chemical asphyxiants
Rubber fume and rubber process dust
Flour dust
Grain dust
Halogeno-platinum compounds
Welding Fumes and gases
Silicosis Elimination Plan
Medical surveillance, medical screening and biological monitoring
Figure 1: Relationship between biological monitoring, medical screening and medical surveillance
Indications for conducting medical screening
Designing and implementing a programme of medical surveillance
Outcomes Management: Non-work-related findings
Outcomes Management: Work-related findings
Medical fitness and Incapacity
Legal duties in occupational disease identification
Biological monitoring
Distinction between biological monitoring, biological exposure monitoring and biological effect monitoring
Objectives and uses of biological exposure monitoring
Important considerations in biological exposure monitoring
Biological exposure indices
Figure 2: The relationship between the RHCA OEL, ACGIH TLV and RHCA BEI.
Biological exposure indices
Biological monitoring sampling strategy
Consultation with health and safety committee/ representatives

Complete draft guideline available on www.labour.gov.za under - resource centre - publications