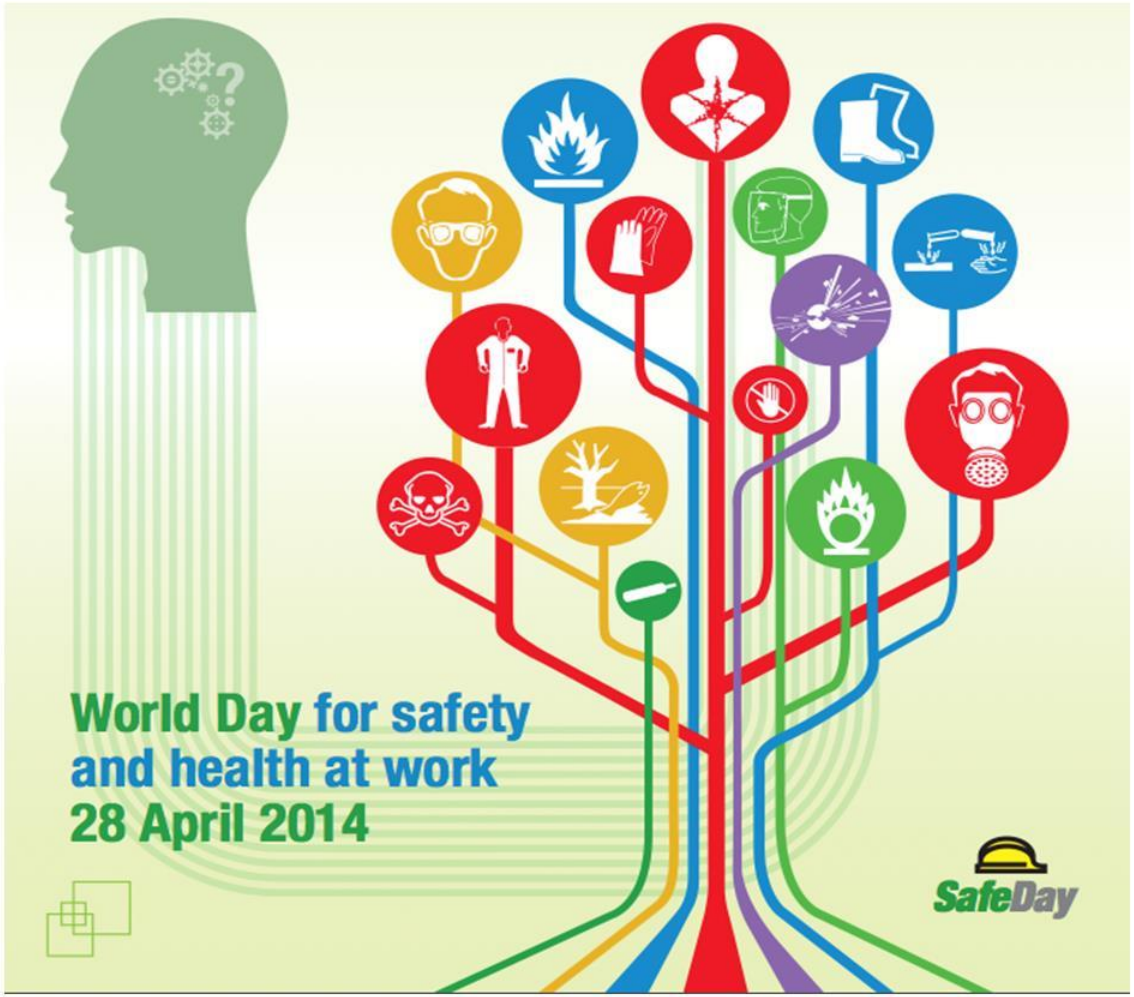
SAFETY AND HEALTH
IN THE USE OF
CHEMICALS AT WORK

International Labour Organization



Protecting workers and the Environment

This report for the 2014 celebration of the World Day for Safety and Health at Work:

- Reviews the current situation on the use of chemicals and their impact in workplaces and the environment;
- Includes various national, regional, and international efforts to address the safe use of chemicals at work.
- Presents the elements for establishing national and enterprise level programmes that contribute to ensure the sound management of chemicals at work.

Why are chemicals important in the workplace?

What is a chemical?

All chemical elements and compounds, and their mixtures, whether natural or synthetic .

Hazardous chemicals are classified according to the type and degree of their intrinsic health and physical hazards.

The hazardous properties of mixtures of chemicals are determined by the assessment of the intrinsic hazards of each of their individual chemical substances.

ILO Convention on safety in the use of chemicals at work, 1990 (No.170)

- Chemicals are essential to life, and their benefits are widespread and well-recognized. (e.g. pesticides, nanomaterials).
- Chemicals are also a critical part of many industrial processes important to maintain global standards of living (e.g. cleaning products, pharmaceuticals).
- However, chemicals have potential adverse effects on the health of people and on the environment.

How widely are chemicals used in the workplace?

- Almost every type of workplace uses chemicals, and thus a broad range of workers are potentially exposed.
- The safety and health effects of many individual chemical substances are inadequately assessed.
- Mixtures of such substances are generally unique to the workplace involved, and are rarely assessed or tested in the form of a mixture.
- Most workers are exposed to mixtures rather than individual chemical substances, that is why the control of mixed exposures is critical for an effective preventive and protective programme.

The Chemicals Convention, 1990 (No. 170) defines the term **use of chemicals at work** to cover any work activity which may expose a worker to a chemical, including:

- the production of chemicals;
- the handling of chemicals;
- the storage of chemicals;
- the transport of chemicals;
- the disposal and treatment of waste chemicals;
- the release of chemicals resulting from work activities;
- the maintenance, repair and cleaning of equipment and containers for chemicals;

What is the impact of chemical exposures on workers' health?

- Chemicals can cause effects on every system of the human body. Exposure to certain chemicals causes serious occupational diseases, such as occupational cancer.

Some problems determining chemicals' impact on worker's health:

- Lack of recognition of the different effects;
- Long latency period before some effects are seen.

- The significant impact on an individual who has developed a disease as a result of chemical exposure may be incalculable. From inability to work to death.

How are exposures to hazardous chemicals controlled in the workplace?

- Governments and organizations tend to focus on individual chemical substances when developing strategies to prevent exposures harmful to workers health, because of the complexity of assessing mixtures.

- **Occupational exposure limits values (OEL)**: Are recommended or required numerical limits for workplace exposure. These are standards developed to assist in the establishment of control measures from health hazards; are used by industrial hygienists in defining maximum levels of exposure to various chemical and physical agents in the workplace.

- **Threshold Limit Values (TLV)**: Are the most widely used. Recommended levels with no legal requirement. Some countries have adopted them and made them legal in their systems, (ACGIH).

- Other terms used are **Permissible Exposure Limits, Recommended Exposure Limits, and Maximum Allowable Concentrations (MACs).**

What are the effects of the physical hazards of chemicals in the workplace?

- Significant potential for property damage to the facility.
- Injuries to workers if they chemicals are not properly controlled.
- In the worst cases, impacting on the surrounding community and the general environment.

A fire in a chemical plant can lead to a toxic mixture of chemicals.

How can we achieve the sound management of chemicals in the workplace?

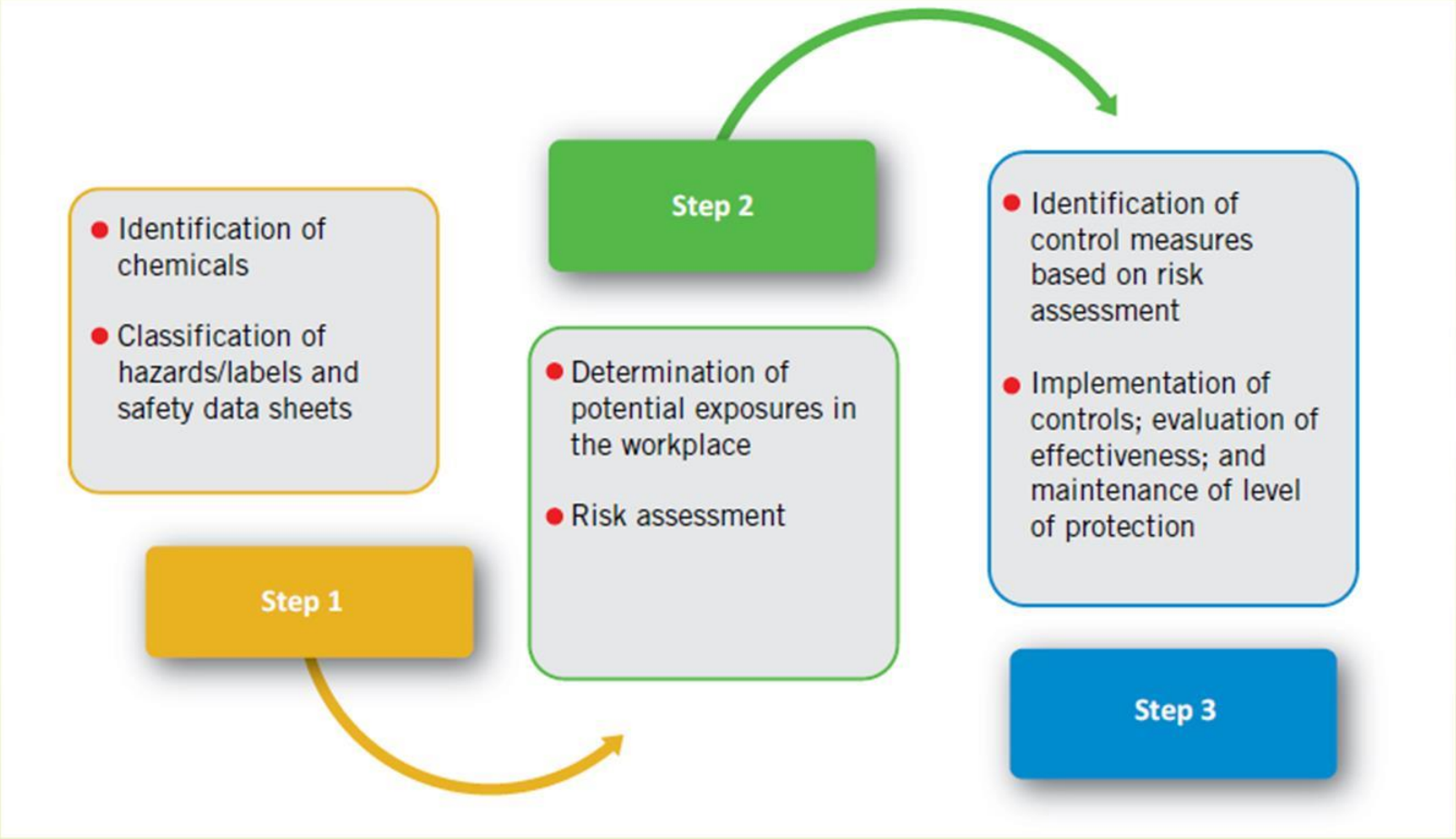
- Significant progress has been on chemicals safety, but it is still insufficient.

- The rate of innovation and research on the development and use of chemicals is rapid, but the pace of investigating the safety and health impact of these chemicals is much slower. (e.g.: Nanotechnology).

- We need to keep working on:

  - Providing workers with a safe and healthy working environment,
  - Informing, training and protecting them;
  - Gathering information about chemical hazards and risks;
  - Implementing preventive and protective measures.

How can we achieve the sound management of chemicals in the workplace?



What should a workplace level program for safety and health in the use of chemicals include?

General obligations,

responsibilities and duties of the competent authority, employers, workers, and suppliers;

Rights of workers;

Confidential information.

Classification systems,

labeling and marking,

CSDS;

Operational control measures,

Design and Installation,

Work systems & practices

Personal protection

Information and training

Maintenance of engineering controls

Exposure Monitoring

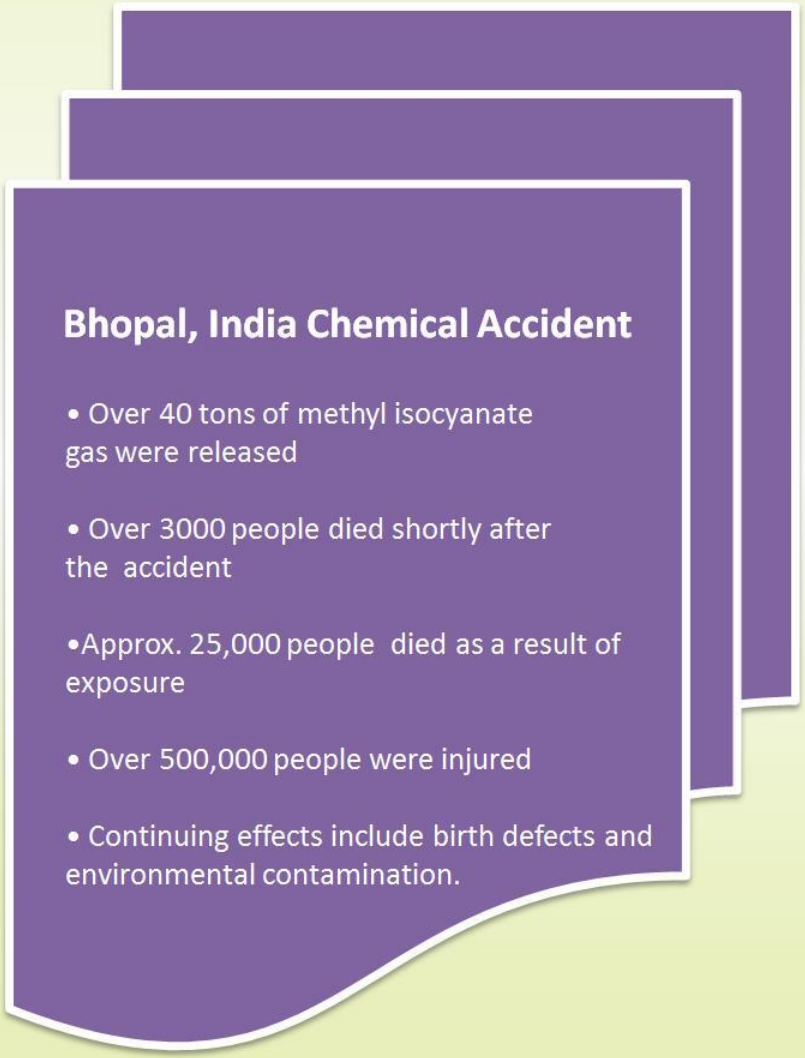
Medical health surveillance

Emergency procedures and first aid

Investigation and reporting of accidents, incidents and diseases

ILO Convention on Safety in the Use of Chemicals at Work, 1990 (No. 170), provides a blueprint for the sound management of chemicals in the workplace.

What is the impact of chemicals on the environment?



- Chemicals have proven to have a significant impact on the environment; from climate change to the destruction of wildlife species and the contamination of drinking water.
- Pollution crosses borders. to have an effective national programme for the environment, there must be an international coordinated strategy to promote a similar approach for all countries.

How does safety in the use of chemicals at work relate to environmental protection?

- While safety in the use of chemicals in work processes is one step, proper disposal and management of emissions and releases are relevant as well.
- A thorough examination of the potential risks of a chemical in the workplace will include all of the steps in the life cycle, including those related to environmental protection.

Social dialogue for the sound management of chemicals

- The sound management of chemicals requires effective and efficient governance through transparency, public participation, and accountability involving all stakeholders.

- The active participation of employers' and workers' organizations is essential for the development of national policies and programmes for the sound management of chemicals and their good governance.

Would a framework for action at the national level help achieve the sound management of chemicals?

National framework for action for the sound management of chemicals

A good national OSH system is critical for the effective implementation of national policies and programmes on OSH; and in particular for the sound management of chemicals. Such a system should include:

- Incorporation in Laws, regulations and collective agreements;
- Law compliance mechanisms, including effective OSH inspection systems;
- Risk assessment and management measures;
- Cooperation between management and workers and their representatives in the implementation of OSH measures;
- Provision of occupational health services;
- Adequate mechanism for the recording and notification of occupational accidents and diseases;
- Awareness raising, OSH information sharing and training on safety and health measures in the use of chemicals at work;
- Collaboration between ministries of labour, health and environment.

What other international developments relate to the implementation of the sound management of chemicals?

A major part of international work in this field takes place through collaboration within established mechanisms for inter-agency and international cooperation where the ILO participates

United Nations Conference on Environment and Development (UNCED)

Adopts the Global Harmonized System of Classification and Labelling of Chemical as one of its mandates.

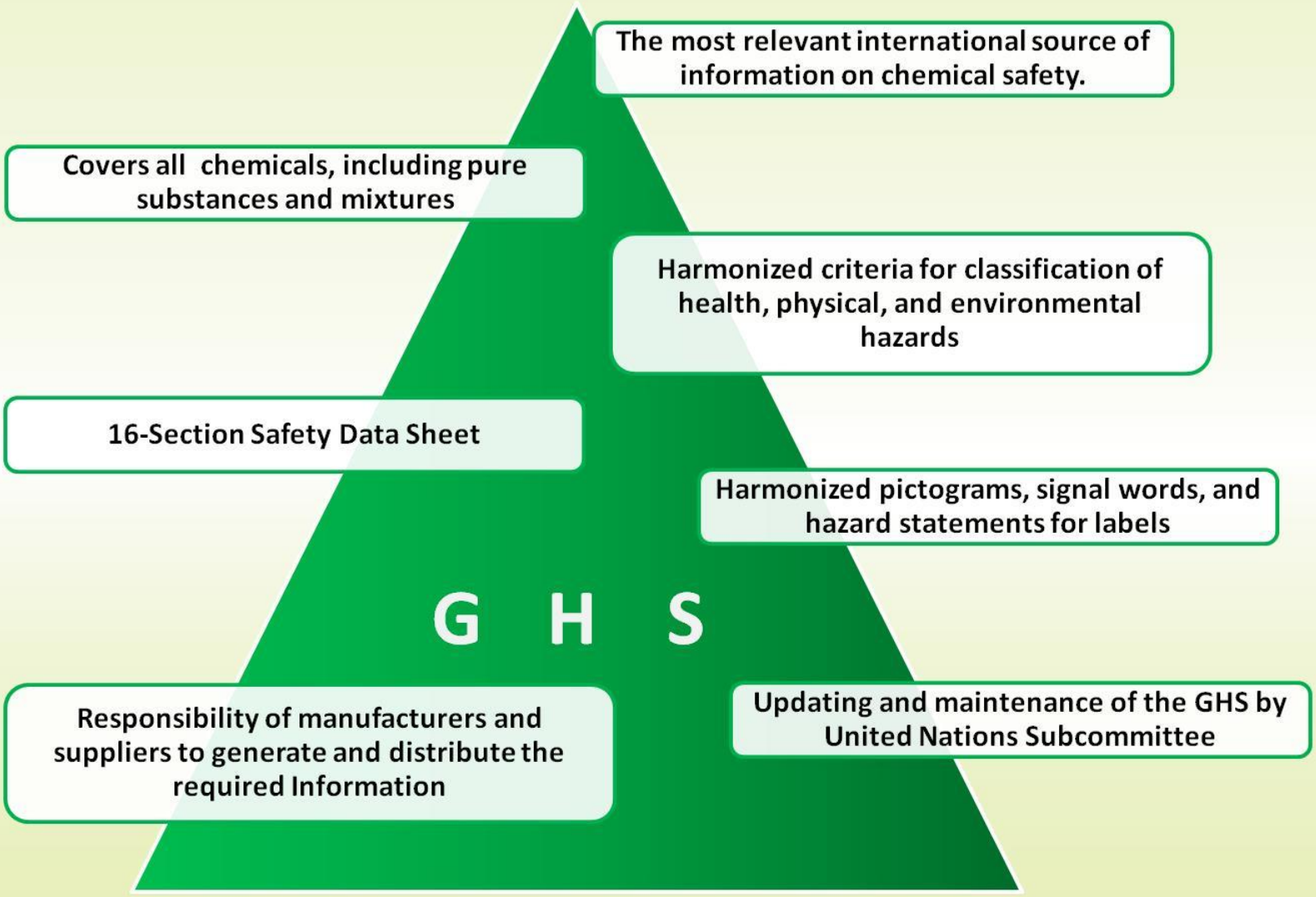
Inter-organization Programme for the Sound Management of Chemicals (IOMC)

International organizations responsible for implementation activities related to UNCED.

Strategic Approach to International Chemicals Management (SAICM)

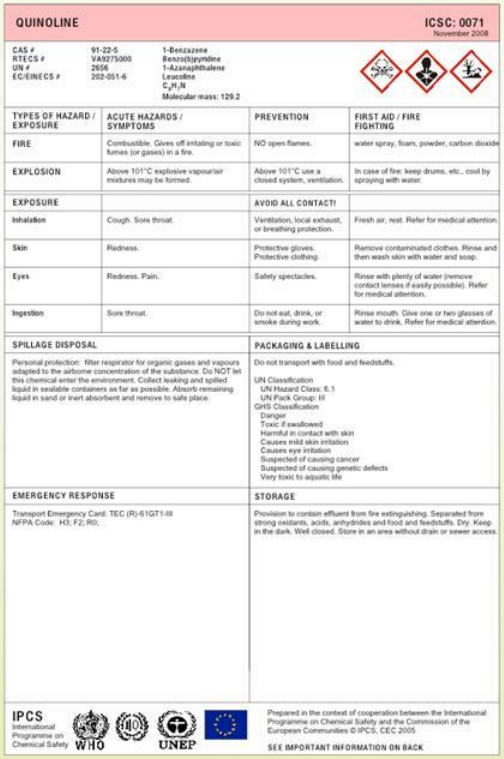
Policy framework for international action

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS)



International Chemical Safety Cards (ICSC)

- An ILO/WHO project with the cooperation of the European Commission.
- Objective: Disseminating appropriate chemicals' hazard information for workplace use.
- Internationally agreed reference providing up-to-date information to complement any available chemical safety information at national or enterprise level for the sound management of chemicals.
- The Cards provide a concise summary of potential adverse effects of a chemical, as well as protective measures.
- 1700 Cards in 16 different languages.



QUINOLINE — **ICSC: 0071** — November 2008

CAS # 91-22-5 — 1-Benzazene
RTECS # VA9275000 — Benzo[b]pyridine
UN # 2656 — 1-Azanaphthalene
EC/EINECS # 202-051-6 — Leucoline
C_9H_7N
Molecular mass: 129.2

TYPES OF HAZARD / EXPOSURE	ACUTE HAZARDS / SYMPTOMS	PREVENTION	FIRST AID / FIRE FIGHTING
FIRE	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames.	water spray, foam, powder, carbon dioxide
EXPLOSION	Above 101°C explosive vapour/air mixtures may be formed.	Above 101°C use a closed system, ventilation.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		AVOID ALL CONTACT!	
Inhalation	Cough. Sore throat.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
Skin	Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
Eyes	Redness. Pain.	Safety spectacles.	Rinse with plenty of water (remove contact lenses if easily possible). Refer for medical attention.
Ingestion	Sore throat.	Do not eat, drink, or smoke during work.	Rinse mouth. Give one or two glasses of water to drink. Refer for medical attention.

SPILLAGE DISPOSAL

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place.

PACKAGING & LABELLING

Do not transport with food and feedstuffs.

UN Classification
UN Hazard Class: 6.1
UN Pack Group: III
GHS Classification
Danger
Toxic if swallowed
Harmful in contact with skin
Causes mild skin irritation
Causes eye irritation
Suspected of causing cancer
Suspected of causing genetic defects
Very toxic to aquatic life

EMERGENCY RESPONSE

Transport Emergency Card: TEC (R)-61GT1-III
NFPA Code: H3; F2; R0;

STORAGE

Provision to contain effluent from fire extinguishing. Separated from strong oxidants, acids, anhydrides and food and feedstuffs. Dry. Keep in the dark. Well closed. Store in an area without drain or sewer access.

IPCS International Programme on Chemical Safety — WHO — ILO — UNEP

SEE IMPORTANT INFORMATION ON BACK

ILO and the impact of chemicals on the environment

- Chemical Convention,1990 (No.170) and Recommendation (No.177).
- Code of practice on safety in the use of chemicals at work.
- Prevention of Major Industrial Accidents Convention, 1993 (No.174) and Recommendation (No.181).
- Code of practice on the prevention of major industrial accidents.
- Manual on Major Hazards Control.
- Manual on safety in the use of agrochemicals.
- ILO/UNITAR Global Capacity Building Programme on Chemicals and Waste Management.
- ILO participation in IOMC/SAICM.
- ILO/WHO ICSC Project.

Registration, Evaluation, Authorization and Restriction of Chemicals

New EU regulation that addresses chemicals throughout their life cycle:

- To provide a high level of protection to human health and the environment.
- To make the suppliers responsible for understanding and managing the risks associated with their use.
- To allow the free movement of substances in the EU market.
- To promote the use of alternative methods for the assessment of the hazardous properties of chemicals.

The Committee of Senior Labour Inspectors (SLIC)
CHEMEX: Working Group on occupational safety and health of chemicals

- provides guidance to inspectorates on the enforcement of REACH and other measures to improve the sound management of hazardous substances in workplaces.
- Involved in monitoring and enforcement of the Community Law on OSH by the EU member States concerning chemicals.

Final remarks

- Governments, employers, and workers and their organizations can achieve the sound management of chemicals with concerted efforts to ensure a coordinated and sustainable management and decent work for all.

- An appropriate balance between the benefits of chemical use and the preventive and control measures of potential adverse impacts is necessary.

- National preventive and control strategies and programmes need to be developed and implemented to comprehensively and simultaneously address the health, safety, and environmental aspects related to the use of chemicals at work.