

OSART Good Practices
CHEMISTRY
Quality control of operational chemicals and other substances

Tihange, Belgium

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Incompatibility matrix for storing chemical products in chemical laboratories.

The displaying of the matrix in all storage areas of the chemistry laboratories has brought about quick and seamless improvements in industrial safety and the storage of chemical and/or dangerous products.

The incompatibility matrix for storing chemical products is included in the Memento booklet, nuclear safety and quality expectations. It is also found on each storage cupboard for dangerous products in the chemistry laboratories.

The principles for storing dangerous substances are described in detail in the CHIRAD/00/028 procedure. The incompatibility matrix summarizes in a schematic way the elementary rules for storing chemical products. It is a quick and simple visual tool to know where a chemical product should be stored in relation to the risks pictogram(s) found on its label:

Chemical products are classified in 6 risk categories:

•Oxidant • Corrosive- acid

•Flammable • Toxic

•Corrosive- base • Harmful / irritant

- Flammable products should be stored separately from others.

- The acids should be kept separately from the bases.

- Harmful / irritant products and toxic products can be stored together.

- If a product has several risk factors at the same time, the following priority must be taken in terms of classification: oxidizing > flammable > corrosive > toxic > harmful/irritant.

The station has a department chemical control representative (DCCR) in all its departments. DCCR acts as a point of contact for the station chemical control coordinator when problems involving chemical product use, storage, labeling, or disposal arise and assists in resolving these problems. DCCR is also required to take corrective actions when gaps are identified in meeting chemical control requirements. DCCR coordinates the monthly chemical control locker inspections and assists personnel in the department with the purchasing process for chemical products. In addition, the following factors contribute to the successful chemical control programme at the station:

- Each storage area has a designated person whose responsibility is to assure that the handling, labelling and storing of chemicals is done in a proper manner. Ownership creates responsibility.
- The station chemical control coordinator does quarterly walk-downs together with the department chemical control representative to inspect storage areas for unauthorized or improper use of chemicals.
- The station has strictly followed the policy in labelling all the chemicals at the site (5 different types of labels).
- If chemicals have to be transferred to smaller containers, the secondary containers are available in various storage locations. These secondary containers are pre-labelled but also plant specific labels must be attached to the containers.

The benefit of this approach, as compared to the arrangement whereby the chemistry department is the only responsible organization for chemical control, is as follows:

- The responsibility for the chemical control and labelling is distributed throughout the departments using the chemicals.
- Departments have their own contact point to help personnel on a day-to-day basis regarding questions on handling, storing and labelling the chemicals.
- The station chemical control coordinator has a clear contact point in the other departments.

Personal hydrazine exposure measurement.

Purpose

Monitoring of carcinogenic hydrazine personal exposure.

Description

In NPPs, carcinogenic hydrazine is used as oxygen scavenger. At the same time, the Personal Exposure Limit (PEL) for hydrazine (0.1 ppm for 8h) has been reduced by a factor of ten by the European Carcinogen and Mutagen Directive 2017/2398/EC, which has set a new binding regulatory PEL for hydrazine at 0.01 ppm for 8h (0.013 mg/m3).

The plant uses a passive hydrazine dosimeter which accumulates the quantity of hydrazine absorbed and indicates in real time the PEL. The current means of measuring hydrazine vapors, both mobile and fixed, only measures the real-time concentration. To take into account the cumulative exposure to the vapors in accordance with the European directive, a new detector is used. This complies with the requirements of the directive on the Limit Value of Professional Exposure (VLEP).

Personal hydrazine exposure meter



Benefits

- Safety gain: reduction of the personnel's exposure to hydrazine
- Operational gain: the personnel is more serene during interventions because they can visually control their exposure in real time.
- Potential financial gain: early detection of exposure will avoid medical expenses in case of occupational disease.