AVOIDING CHEMICAL POLLUTION OF WATER

1. WHAT IS POLLUTION

In CERN’s safety policy the Organization commits itself to carrying out its activities in a safe manner, to protect its staff, visitors, the public, and the environment. An important part of the environmental protection is the avoidance of water pollution. Pollution is defined as any harmful modification of the physical, chemical or biological properties of water.

2. WATER POLLUTION HAZARDS AT CERN

Typical examples of polluting liquids are hydrocarbons (oils, solvents, fuel, lubricants), corrosive products, acids and bases or other more banal liquids such as paints. Sometimes liquids believed to be clean, like demineralized water, may be harmful to the environment when released into the watercourses in large amounts all at once because of their different properties compared with natural water (the mineral content in the example above). On the other hand, the content of a beaker of water mixed with detergents, which has been used for room cleaning, cannot be considered as polluting.

Each individual has the right and duty not to perform an operation if he or she has the smallest doubt of whether the operation could be dangerous to the environment.

If one is not sure whether a liquid could or could not be polluting, one should ask one of the competent CERN services in TIS Division.

They are:

1) The Chemistry, Gas and Industrial Hygiene Section for chemical installations, incidents and the disposal of hazardous waste, tel. 78526, 73538;

2) The Environmental Section for environmental monitoring and management, tel. 73893, 74780, 74040.

A leak involving pollution may happen during the following activities and situations:

- Filling of liquids into reservoirs or equipment;
- Transport of liquids in tanks or through pipes and hoses;
• During a malfunction of a device using a polluting liquid (e.g. compressors);
• Temporary storage of larger amounts of polluting liquids in various reservoirs.

There are two main drain systems at CERN:

1) Drainage for surface water comprising rainwater collected on the various parking places, roads and roofs of buildings;
2) Drains for sewage water collecting waste liquid effluents resulting from activities on the sites.

It is strictly forbidden to introduce polluting substances, directly or through drainage, into either of the drain systems.

3. PRACTICAL MEASURES TO AVOID POLLUTION

To prevent pollution, one shall set up preventive measures during the design stage of an installation and observe strict rules when manipulating liquids.

A safety inspection by TIS is mandatory before the commissioning of a new or a modified installation.

Pollution preventive measures include:

1. Use products and processes, which are designed not to pollute. Replace liquids with those that are less harmful for the environment

2. Identify potential polluting liquids (hydrocarbons, detergents, acids, bases, etc.), their impact on the environment and the way of clean-up

3. Avoid loss of containment
• Follow good engineering practice for dimensioning, construction, modification and operation, and prevent access by unauthorised persons;
• Provide reservoirs with level gauges and overflow pipes;
• Protect pipelines against corrosion when relevant;
• Fit pipelines to avoid the leakage of the total volume of stored liquid where possible;
• Set up retention and easy detection of liquid spillage: install leak detectors in pipelines from which the liquids may leak and which are not inspected daily, design retention reservoirs with sufficient capacity;
• Generate automatic alarms (level gauges in retention pits and other reservoirs…).

4. Establish a programme for the regular cleaning of separators

5. Do not pour potentially polluting liquids into the sink, but profit from the competent CERN services in TIS Division for disposal and advice:
• Chemistry, Gas and Industrial Hygiene Section of TIS, tel. 78526, 73538;
• Environmental Section of TIS, tel. 73893, 74780, 74040.
6. Identify the flow path and the release point for your installation in the event of a leakage

If you observe or believe there is a leakage to the environment try to stop it if possible, call the Fire Brigade (74444) and inform the Technical Control Room (72201).

4. LEGAL MATTERS

4a) Liaison with the Host States

Releases of liquids by CERN into the environment and the quality of water in the watercourses are subject to the Swiss law on the Swiss territory and to the French law on the French territory. For the “Installations Nucléaires de Base” (INB) installations, there are additional requirements concerning safe containment of liquids. A Tripartite Committee on the Environment, which consists of representatives from the Republic and Canton of Geneva, the Prefecture of Ain and CERN, has been created to address environmental issues relating to CERN and to regularly examine the levels of protection in force, the potential risks and the suitable prevention means.

4b) Legal basis

This Safety Instruction is published by TIS Division under the procedure set out in the CERN Safety Policy Document SAPOCO/42 and pursuant to the CERN Staff Rules and Regulations.