VENTILATION REGULATION
2600ESS-291

1.0 PURPOSE

The purpose of this standard is to establish uniform requirements for the removal of contaminating agents and prevent the adverse effects of heat stress, through an engineering control of ventilation.

2.0 BACKGROUND

The Panama Canal Authority has many structures and activities for which it utilizes mechanical ventilation.

3.0 RANGE

This regulation is applicable to all Panama Canal Authority (ACP) employees, contractors and third parties within installations, industrial workshops, and areas under ACP responsibility.

4.0 LEGAL BASIS

This standard is based on Agreement No. 12 of the Board of Directors of the Panama Canal Authority, Hazard Control and Occupational Health Regulations, Chapter 1, Articles 8, 16 and 17.

5.0 DEFINITIONS

For the purposes of this regulation, the following definitions shall apply:

5.1 Ventilation: The introduction and movement of fresh air in a space either by mechanical or by natural means, for the purpose of removing and replacing contaminated air or to control the temperature in such space.

5.2 Contaminant: Any compound or mixture of either solid, liquid or gas compounds, whose inherent properties are capable of causing harm to health or materials.

5.3 Ventilation with Local Extraction: Mechanical ventilation for the purpose of removing contaminants from the immediate location where they are generated, through the use of flexible ducts.

5.4 General Ventilation: It is also known as dilution ventilation, and `may be of two types: air supply or extraction ventilation.

5.5 Push/Pull Ventilation: Ventilation that results from the combination of simultaneously applying ventilators to introduce fresh air and operating ventilators to extract air and any existing contaminants.

6.0 GENERAL

6.1. GENERAL REQUIREMENTS

6.1.1 All parameters to be followed concerning the aspects of the type of ventilation to be used, such as the permissible contaminant toxicity levels, respiratory protection, explosion proof or intrinsically safe equipment, noise protection, skin protection, and illumination arrangements as may be required, and various policies (such as confined space policies) shall be established by the Manager, Industrial Hygiene Department (ESSI) or his designee, as the case may be.

6.2 WORK PROCEDURES

The selection of a ventilation system will depend on the type of work to be performed and its location, as follows:

6.2.1 For work performed in confined spaces, see section 6-1.2 of the Safe Practices for Work in Confined Spaces Manual (2600ESS-290).

6.2.2 For work performed in carpentry shops, a local extraction ventilation system shall be installed, which may be:

6.2.2.1 A Central System: Every machine will have its own collection duct where contaminants are collected (dust and sawdust) upon their generation. Contaminants are then discharged at a common collection point along with those from other machinery, for their subsequent final disposal.

6.2.2.2 An Individual System: Every machine will have its own collection duct and collection point.

6.2.3 For work performed in welding shops, a local extraction ventilation system shall be installed, which may be:

6.2.3.1 A Central System: There will be a device or duct at each work table that collects contaminants (welding fumes) at the time they are generated. Contaminants are then discharged at a common collection point along with those from other work tables.

6.2.3.2 An Individual System: Every work table shall have its own extractor to collect contaminants, independently from other work tables. Contaminants may be collected with a HEPA filter for final disposal or discharge. The point of discharge shall be at a location where the health of third parties will not be affected (open areas). This system may be portable.

6.2.4 For floating equipment, ESSI shall be consulted prior to making any alterations to factory ventilation systems.

6.2.5 For facilities where spray painting is performed (spray booths), extraction ventilation shall be used. The minimum average suction speed shall be 100 linear feet per minute in the suction flow cross section area, measured at various points at the open face of the booth.

6.2.6 For sandblasting surface preparation in enclosed spaces (with canvas, tenting, and/or booths), local extraction ventilation shall be used. Its extraction flow shall be 500 to 2000 cfm, enough to remove immediately any cloud of dust generated during the operation. The collected contaminants shall be transported to a dust collector for their subsequent final disposal, and shall not be allowed to affect the health of third parties.

6.2.7 In areas with high heat generation, such as from boilers or similar equipment, a general ventilation system shall be installed (air supply, air extraction, or a combination of both).

6.2.8 Air extracted with a ventilation system shall not be allowed to contaminate other working areas, or affect the health of third parties (open spaces).

6.2.9 Contact the Industrial Hygienist for work involving:

- The handling of fiberglass or similar materials
- The application of lead (Babbitt) to valve seals
- The application of flammable or combustion products, among others.

6.3 ORIENTATION

6.3.5 Where a mechanical ventilation system is to be installed, supervisors shall instruct employees regarding its objective and the importance of an effective collection and discharge of the contaminants generated at work.

7.0 RESPONSIBILITIES

The drawings or design of new ventilation systems, or any modification to those at Panama Canal Authority (ACP) shops are the responsibility of the Engineering Division (IPI), as is the approval of those prepared by consultants or contractors.

ESSI shall ensure that the functional parameters of ventilation systems designed by the Engineering Division comply with design specifications.

Supervisors or the persons in charge of work areas or shops shall ensure that ventilation systems are operative, regardless of the type of ventilation installed. They shall also keep a record of the ventilation system preventive maintenance program, which shall include, at least:

- The date of its last maintenance,
- The date in which corrective maintenance was performed,
- The type of repair.

The responsibilities for the enforcement of this standard are described in the Safety and Occupational Health Regulations, Section 1, 1.5.

8.0 INQUIRIES

Any information or clarification of the content or application of this standard may be requested in writing to ESSI.

9.0 EXCEPTIONS

Any deviations or temporary exceptions to compliance with this standard may be requested in writing to ESSI.

10.0 TERM

This standard shall remain in force until revised or amended.

11.0 EXCEPTIONS

Any temporary deviations from or exceptions to the compliance of this regulation shall be requested in writing to the ESSI.

11. REFERENCES

11.2 File Retention Table, Records Management Section, ACP.
11.3 Manual on Safe Practices for Work in Confined Spaces (2600ESS-290).
11.4 Federal Code of Regulations (29 CFR 1910.107)