



2600SEG110 MATERIAL HANDLING SAFETY STANDARD

1.0 PURPOSE

To establish safety conditions and procedures to prevent work risks caused by the handling of materials.

2.0 BACKGROUND INFORMATION

Panama Canal Authority (ACP) Safety and Occupational Health Manual, Section 8, Paragraph 8.5.

3.0 SCOPE

This standard applies to all ACP employees, contractors, and third parties performing works at facilities under ACP jurisdiction.

4.0 LEGAL BASIS

This standard is based on Agreement No.12 of ACP Board of Directors, Risk Control and Occupational Health Regulations, Chapter 1, Article 3.

5.0 DEFINITIONS

For the purposes of this standard, the following definitions are established:

5.1 Manual materials handling: The activity developed by a worker when lifting or moving materials through the use of his own physical strength.

5.2 Manual materials transportation: The activity where the weight of the materials is fully born, moved, or transported from one place to another by a worker, without help from wagons or carts, including lifting and placing materials.

5.3 Wagon, cart: Vehicles with one, two or more wheels used to transport material in bulk or packed through relatively short distances, which are partially held and pushed by workers.

5.4 Baling: Any box, bale, or cover used to safeguard the material to be stored or handled.

5.5 Packaging: Any wrapping and frame used to keep all materials together for storage or transportation.

5.6 Stowage: The activity of accommodating materials one on top of the other in structures, containers or platforms.

5.7 Materials handling: The action of lifting, bringing down, pulling, pushing, transferring, and stowing, either manually or with the help of machinery, raw materials, sub-products, finished products, or residues.

5.8 Conveyor: A horizontal device either inclined or vertical, that is used to move bulk materials, boxes or objects on a band or rollers, according to a predetermined route, with fixed loading and unloading points.

5.9 Machinery: The mechanism or set of mechanisms used to lift, pull, push, transferring or stowing materials vertically, and move them horizontally while keeping them suspended. For the purposes of this standard, mechanisms such as hoists, forklifts, cranes, conveyors, front loaders, or a combination of loaders are considered as machinery.



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6.0 GENERAL

6.1 Maintaining working areas clear of obstacles and the floors clean and dry. Stowed materials shall not obstruct either the lighting or ventilation in areas where they are required.

6.2 Having a signal code or communications system and training those operators and their aids who are involved in handling materials with machinery, as required.

6.3 Submitting to preventive maintenance equipment and accessories used for handling materials per the manufacturer's recommendations, and according to their operational conditions and the results of the revisions performed; documenting all actions taken.

6.4 Electric facilities, fire extinguishers, ventilators, air or water intakes, must be kept clear of obstructions by the materials handled.

7.0 TRAINING

7.1 Workers training shall include methods to lift, carry, place, unload and store the different types of materials and shall be provided by persons or institutions with the required competencies.

7.2 Contractor shall provide training for their own employees.

8.0 MANUAL LOADING AND MATERIAL HANDLING, AND OCCUPATIONAL HEALTH

8.1 The Health, Wellness and Labor Welfare Unit (RHSS) watches over workers health pursuant to the protocol established for each activity – (in this case refer to materials handling by using physical strength or wagons or carts).

8.2 Special medical tests as established in RHSS standards shall be performed whenever an exposed worker presents injury or illness symptoms.

8.3 Works related to manually loading materials shall not be performed by those workers that HRH may indicate; pregnant women, and those who are within the 10 weeks after giving birth, must inquire HRH whether there are any limitations.

9.0 SAFE PROCEDURES

Pursuant to the Hazardous Materials Information standard, the supervisor shall inform workers of all potential risks that they face by handling materials; if these materials are hazardous, and will be handled manually, consideration shall be given at least to their weight, shape and dimensions; and when handling them with machinery, at least the following shall be considered:

- a. The state of matter
- b. The presentation of the matter, which may be:
 1. In bulk
 2. Per individual part
 3. Bottled or canned
 4. Packed
 5. In containers
- c. Type of machinery used
- d. The loading procedure
- e. The stability of materials or containers



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- f. The stowage height
- g. The weight, shape and dimensions of materials and containers
- h. The elements used to secure materials or containers.

9.1 When manually transporting materials (not using machinery), the weight shall not exceed the weight established in each worker's position description. No worker shall be demanded to manually transport materials whose weight may compromise the workers health or safety. **(see table #1 annex)**

9.2 Workers handling materials with objects that have cutting edges, burrs, chips, sharp points, nails or other hazardous protrusions, as well as those having extreme temperatures or irritating, corrosive, or toxic substances, shall be furnished with personal protection clothing and equipment, according the specific risk that they shall be exposed to.

9.3 When manually carrying objects with a length exceeding 4 meters, at least one worker each 4 meters or fraction of the object's length shall be used.

9.4 Barrels of up to 200 liters (55 gallons) may be transported manually by inclining and rotating them by the edge of their base. Those with more capacity shall only be transported by using machinery or wagons, adopting the pertinent safety measures.

9.5 Manual transportation of materials, whose weight or length exceeds the provisions of this standard, shall be carried out by forming manual transportation groups, so that there may be coordination among the members of the group.

9.6 When pushing wagons on a flat floor, materials shall be pushed towards the front, rather than pulled with the worker's back towards the wagon.

9.7 When pushing wagons in slopes, attention shall be paid to cargo stability, and the required safety measures shall be taken to prevent this activity from putting the worker or workers at risk.

9.8 Whenever a wagon is weighed to unload it at the edge of a ditch, a wheel-stop shall be placed at the unloading zone.

9.9 Environmental protection: Should the packing or baling be accidentally damaged or ruptured, resulting in a spill, pouring or emission of the material handled, the activity shall be suspended and the supervisor notified immediately. Do not continue with the activity until the problem is solved.

10.0 RESPONSIBILITIES

10.1 Workers shall be responsible for:

10.1.1 Participating in the training courses provided by ACP.

10.1.2 Installing, operating and maintaining only such machinery for which they have been authorized by the employer and according to the safety and hygiene procedures.



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10.1.3 Reporting to the supervisor or the safety and occupational health specialist such risk situations they may detect, which they may not correct by themselves, and which endanger their physical integrity, that of other workers, or the facilities of the work center.

10.1.4 Utilizing the personal protection equipment pursuant to the use and maintenance instructions supplied by their supervisor.

10.1.5 Not altering, suppressing, or omitting any safety and hygiene devices, systems or procedures established by their supervisor.

10.1.6 Given the hazard that they may be exposed to, submitting themselves to the medical tests prescribed by RHSS.

10.2 Supervisors are responsible for:

10.2.1 The supervisor shall inform workers of the potential risks they may face while handling hazardous materials, pursuant to the provisions of the Hazardous Materials Information Standard, **Standard 2600SEG201**.

10.2.2 Furnishing workers with the specific personal protection equipment, according to the risk that they are exposed to and train them on its equipment and maintenance; and supplying workers with the appropriate equipment and devices necessary to preserve their health and safety.

10.2.3 See Standard 2600SEG127 on Safe Work Analysis and its Annex: The supervisor shall consider all the operational risks of materials handling, perform the safe work analysis of the manual handling of loads, attached to this standard. Whenever the load may exceed the limited allowed per person, the supervisor shall establish a lifting and transportation group or mechanical lifting equipment shall be used.

11.0 CONSULTATIONS

All information or clarification on the contents or application of this standard shall be requested in writing to the Safety and Industrial Hygiene Unit (HRHS).

12.0 EXCEPTIONS

Temporary digressions or exceptions to the compliance with these standards shall be requested in writing to Safety and Industrial Hygiene Unit (HRHS).

13.0 DURATION

This standard shall be in force until it is amended or revised

14.0 REFERENCES

- 14.1** 2600SEG116 Safety Standard for Handling and Storing Compressed Gas Cylinders.
- 14.2** 2600SEG121 Signalization and Barricades Safety Standard
- 14.3** 2600SEG127 Safe Work Analysis Standard
- 14.4** 2600SEG201 Information on Hazardous Materials Standard
- 14.5** Labor Code of the Republic of Panama (Código de Trabajo de la República de Panamá)
- 14.6** Materials Handling – International Labor Organization
- 14.7** ACP Safety and Occupational Health Manual.