Engineering Standard

SAES-B-061 30 June, 2003
Protective Shields for High
Health Hazard Piping and Equipment

Saudi Aramco DeskTop Standards

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1 Scope

This Standard provides requirements for protective shields on equipment handling high health hazard or flammable liquids.

2 Conflicts and Deviations

2.1 Any conflicts between this standard and other applicable Saudi Aramco Engineering Standards (SAESs), Materials System Specifications (SAMSSs), Standard Drawings (SASDs), or industry standards, codes, and forms shall be resolved in writing by the Company or Buyer Representative through the Manager, Loss Prevention Department of Saudi Aramco, Dhahran.

2.2 Direct all requests to deviate from this standard in writing to the Company or Buyer Representative, who shall follow internal company procedure SAEP-302 and forward such requests to the Manager of the Loss Prevention Department of Saudi Aramco, Dhahran.

3 References

The selection of material and equipment, and the design, construction, maintenance, and repair of equipment and facilities covered by this standard shall comply with the latest edition of the references listed below, unless otherwise noted.

3.1 Saudi Aramco References

Saudi Aramco Engineering Procedure

SAEP-302	*Instructions for Obtaining a Waiver of a Mandatory Saudi Aramco Engineering Requirement*

Saudi Aramco Engineering Standard

SAES-B-017	*Fire Water System Design*

3.2 International Codes and Standards

NFPA 704	*Identification of the Hazards of Materials for Emergency Response*

4 Definitions

Flammable Liquid: A liquid that has a flash point equal to or less than 54°C (130°F). Examples would be fluids such as stabilized crude, gasoline, Jet A-1, Jet JP-4, Jet JP-8, C_6 and lighter feed and blending stocks, and methanol. For purposes of this Standard, a

combustible liquid stored or processed at a temperature equal to or higher than 8°C (15°F) below its flashpoint shall be considered to be a flammable liquid.

Full Protective Equipment (for personnel): Personal protective equipment such as PVC gloves, boots, coveralls, approved respirator, goggles, and /or other items as required by the Material Safety Data Sheet (MSDS).

Protective Shields: Devices to prevent injury to personnel from fluid spraying **from** a leak by dissipating the velocity of the fluid and diverting the flow, usually downward. Protective shields are also used to direct oil releases downward from pump seals in high risk areas of plants (see SAES-B-017) in order to reduce the risk of ignition.

For the purposes of this Standard, **High Health Hazard Materials**, as defined herein, include:

(a) Materials with a Degree of Health Hazard rating of 3 or 4 per NFPA 704. Examples are phenol (carbonic acid), tetraethyl lead compounds (TEL), and tetrafluoroethylene (TFE) which have Health Hazard ratings of 3. Health Hazard ratings are listed on Material Safety Data Sheets (MSDS) and other common material references.

(b) Highly corrosive materials such as acid, caustic and other materials injurious to personnel.

Highly Corrosive Materials: For purposes of applying this Standard, materials which, on brief exposure, could cause major injury or destructive damage with a pH level 1-3 (acid) or pH level 12-14 (base). Concentrated solutions (acids or alkalis) are more hazardous than diluted forms of the same material.

5 Applications

5.1 Protective shields shall be installed at the following locations:

5.1.1 Mechanical seal-drive coupling area of horizontal pumps over 150 kW (200 HP) in flammable liquid service.

5.1.2 Packed stuffing boxes and mechanical seals of mechanical equipment such as pumps, hydraulic turbines and agitators in high health hazard materials service.

5.1.3 Separate shielding may be omitted around mechanical seals where the housing around the end plate or gland is of such shape that it forms a shield.

5.1.4 Packing glands of valves handling high health hazard materials.

5.1.5 Flanges in high health hazard material service.

5.1.6 In other locations as required by the Chief Fire Prevention Engineer or his representative, or the Proponent Operating Department.

5.2 Protective shields are not required in areas where personnel are required to wear full protective equipment for entrance to the area.

5.3 Protective shields shall be of a type that can be replaced while the equipment is in service.

Commentary:

The above requirement is intended to provide guidance so that even if a shield is removed or broken while the equipment is in service, there will be less potential for an accidental release. Shields shall remain in place while the equipment is on stream and operating.

5.4 Protective shields shall be non-combustible and shall be otherwise designed in such a way not to create a potential source of ignition.

Revision Summary

30 June, 2003 Revised the "Next Planned Update". Reaffirmed the contents of the document, and reissued with minor changes.