



DOW CHEMICAL U.S.A.

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TEXAS OPERATIONS
FREEPORT, TEXAS 77541

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TITANIUM TASK FORCE REPORT

Problem: Repeated instances of exposure of titanium to dry chlorine resulting in reactive chemical incidents.

Most Recent Texas Incident: The latest Texas incident occurred at A-19 Liquefaction on September 22, 1986, when four out of five seal rings and springs installed in a dry chlorine compressor were titanium.

The gas release was minor and the damage was limited to the first ring to contact chlorine. The air purge on the seal limited the chlorine contact to this first ring. The titanium parts installed in this compressor came from a storage bin that should have contained non titanium parts for the dry compressor. The Chlor Alkali policy is to have all titanium parts locked up. Best records indicate that these parts had been on hand since 1979 and were not labeled titanium.

The crew that installed the compressor is the regular crew that does all the A-19 compressor work. This crew did not question whether these parts were titanium since the parts were not from the locked titanium storage and were not marked as titanium.

Corrective Action:

A Chlor Alkali task force consisting of Joe Bowman, R.F. Brawner, R.W. Crawford, Burt Fleck, Ray Fuchs, Tom Loftus and G.M. Williams was formed to solve the problem. The recommendations of the task force are as follows:

- (1) All titanium parts are to be identified as containing titanium from the supplier by labeling when possible or when not possible tagging with a wired-on tag. Also, parts will have at the minimum, an area painted purple. If not so labeled and painted they will be returned to the vendor.
- (2) Upon receipt all titanium parts will be locked in titanium only storage areas.
- (3) Before being used in dry chlorine service all parts will be tested to reaffirm that they are not titanium. The task force has experimented with several instruments and has been successful in finding three which can distinguish between titanium and other metals. These are the Texas Nuclear X-ray,

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Walker Scientific, Inc. Alloy Thermo-Sorter and Technicorp Wt Alloy Separator. The Walker Scientific will be the primary tester with the others as backup. Mark Geissler of the Dow Mechanical & Metal Technology department has prepared procedures for a titanium determination test. A combination of weight, magnetism, and testing with the Walker Scientific, Inc. Alloy Thermo-Sorter will be used. Each liquefaction plant, each chlorine plant and the Chlor Alkali parts department will have the necessary equipment to test the parts. Part of the procedure is to use a board with actual pieces of parts mounted and identified for reference.

The Texas policy and procedures will be communicated via the Tech center network to the Dow world.

G.M. Williams
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