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From: SAFETY approval account <approval@esf.uvm.edu>
Subject: Yellow Alert: Hydrogen Fluoride Cylinder Ruptures
Sender: Safety <SAFETY@LIST.UVM.EDU>

From: "Princiotto, Laurie A" <lprincio@indiana.edu>
Title: Yellow Alert- Hydrogen Fluoride Cylinder Ruptures

Please share the information below with anyone you know that may have an old lecture bottle of hydrogen fluoride. We had a 22 year old cylinder rupture two weeks ago. Luckily, no one was injured. Since the accident, we have found three other older cylinders in our Chemistry Dept. that we will be disposing of very soon. I'm sure it is going to be very expensive.

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ARTICLE FROM AIR PRODUCTS WEB SITE

Hydrogen Fluoride Shelf Life Issue
12 March, 1997

We would like to inform you of a potential storage hazard which others in our industry have experienced, and which we are communicating to you to help ensure your continued safe use of the products you buy from Air Products and Chemicals.

There is a potential over-pressure hazard with the long term storage of carbon steel cylinders containing Anhydrous Hydrogen Fluoride (AHF). The AHF in the cylinder reacts very slowly with the iron in the steel to form iron fluoride and hydrogen. The hydrogen collects in the vapor space and builds pressure.

An HF lecture bottle (DOT 3E) that had been in storage for as long as 14 years was found to be at an estimated pressure of 2400 psig. While venting the contents of this cylinder to a scrubber, the vented gas was analyzed and found to be primarily hydrogen. The expected pressure based upon the AHF's vapor pressure should have been between 5 - 15 psig.

There have been a few reported cases worldwide of AHF cylinders failing after approximately 15-25 years of storage due to over-pressurization from hydrogen build-up.

If your facility has carbon steel cylinders containing AHF, you should not store these cylinders for extended periods of time without monitoring pressure and cylinder condition. Extreme caution should be taken during the handling of any AHF cylinders that have been stored for extended periods of time.

As with any handling of HF, proper safety procedures should always be used and first aid supplies should be available in the event of personnel exposure.

You should also consider any potential impact on your operation of using the gas from any AHF cylinder that have been stored for extended periods of time since it may now contain hydrogen as well as the AHF.

This communication is consistent with the goals of Responsible Care and reinforces Air Products' leadership in communicating product stewardship and safety issues to our customers. We encourage you to communicate this information to any others in your location who may have access to the AHF cylinders you purchased.

If you have any questions regarding this notification, please contact our Technical Information Center at 1-800-752-1597.