

Incident Summary #II-798918-2019 (#10565) (FINAL)

SUPPORTING INFORMATION	Incident Date	January 12, 2019	
	Location	Surrey	
	Regulated industry sector	Boilers, PV & refrigeration - Refrigeration system	
	Impact	Qty injuries	0
		Injury description	NA
		Injury rating	None
	Damage	Damage description	Ammonia strainer gasket failed and approximately 5 to 10 pounds ammonia leaked out inside of an industrial food processing facility.
		Damage rating	Moderate
	Incident rating	Moderate	
Incident overview	A small ammonia leak occurred at an industrial food processing facility used to freeze poultry. The compressor was shut down by the shift operating engineer and the plant was evacuated. After the ammonia had dissipated and the ammonia detection system's reading dropped to 0 parts per million (PPM), the repair was completed by the contractor. The plant was then restarted without any leaks being observed.		
INVESTIGATION CONCLUSIONS	Site, system and components	<p>Ammonia travels through piping from the compressor to the evaporator to provide refrigeration for the freezer. Piping contains a strainer to clean the ammonia. The strainer is bolted together with flanges and gaskets. The gaskets are used to seal the flanged joint to keep ammonia inside the ammonia piping line. If gaskets work properly, ammonia should flow inside pipe line without leaking out.</p> <p>This facility has an ammonia detection system. The ammonia detection system is used to provide an alarm to indicate ammonia leaks. When ammonia is detected, the exhaust fan will be started to vent ammonia to outside the building.</p>	
	Failure scenario(s)	At approximately 12:30 AM, there was a "pop" sound heard in the lunch room which is above a refrigeration compressor. The site engineer went over to take a look due to an ammonia smell. The reading at the detection station was at 200ppm and the shift operating engineer shut down the refrigeration plant. The building was evacuated and the fire department was dispatched to site. Once the building was safe to enter, a contractor found a failed gasket at the ammonia strainer. No record was found of the history of maintenance or changing of the gasket.	
	Facts and evidence	Statement of plant maintenance manager noted a lack of maintenance program for plant refrigeration system.	
	Causes and contributing factors	The cause of the ammonia leak was very likely due to failure of the gasket in the flange fitting between the ammonia piping and the ammonia strainer. Contributing factors were likely a worn gasket that was past its service life and lack of a defined maintenance program to replace aged gaskets before failure.	

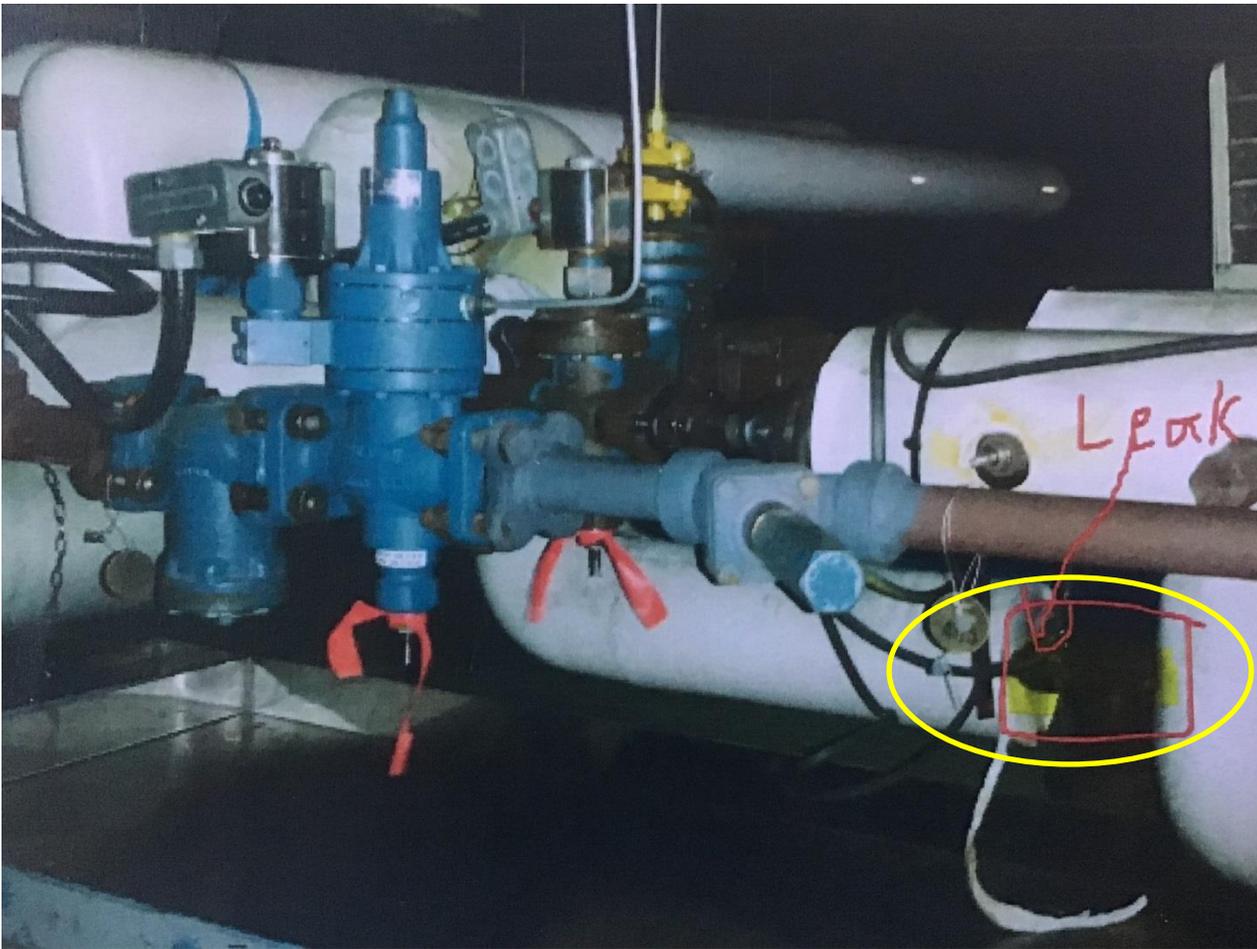


Photo 1 (Submitted by client) shows the location of the ammonia strainer where the leak occurred in the crawlspace area of the facility that the ammonia refrigeration line ran through (yellow oval).



Photo 2 (Submitted by client) Shows the ammonia strainer (yellow arrow) and the flange where the gasket was located (red oval)



Photo 3 (Submitted by client) The ammonia strainer



Photo 4 (Submitted by client) Failed ammonia strainer gaskets