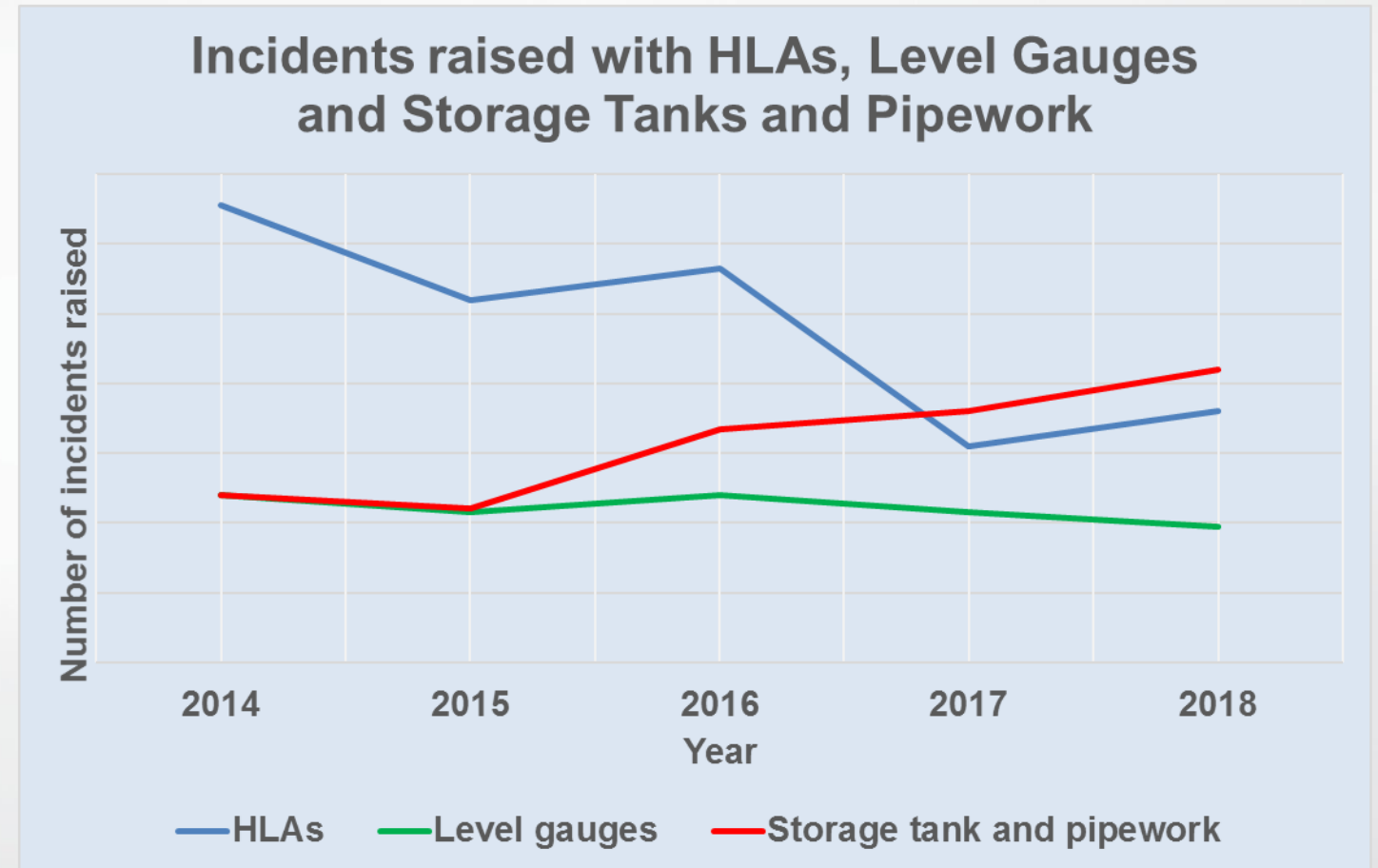


Blocked and Partially Blocked Pipelines

Eurobitume UK Reporting Trends 2014 to 2018

During the delivery of bitumen Eurobitume UK members have reported the following trends in the last 5 years:

- The number of incidents relating to:
 - HLA and HHLAs has fallen.
 - Level gauges are relatively flat.
 - Storage tanks and pipework has increased significantly.



Tank and Pipework related issues

- Three key problem areas have been identified:
 - Integrity of the plant (storage tank and associated pipework).
 - Blocking and restriction of the pipework (including vent lines).
 - Design of the pipework, i.e. number of bends, distance from the delivery flange, etc.

Integrity of the plant

- During the HAZID and HAZOP studies, key areas of vulnerability should be identified and layers of protection implemented.
- Of particular importance is maintaining the integrity of the plant by **‘Planned Preventative Maintenance’**:
 - Ensuring cleanliness of tank internals, i.e. clear of carbon deposits (regular inspection intervals).
 - Regular visual inspection of pipelines, including vent lines, to ensure they are not being corroded or rusting.
 - Regular formal checking of wall thickness / weld integrity of tank and pipelines.

Blocking / Restriction of pipework

- Of particular importance is maintaining unobstructed pipelines to the plant by **‘Planned Preventative Maintenance’**
 - Ensuring cleanliness of tank pipelines, i.e. clear of carbon deposits (regular inspection intervals).
 - Monitor the duration of deliveries. Increased delivery times could mean that the pipework is partially blocked.
 - Regular checking of the vent line to ensure it can release vapours effectively during filling of the storage tank (to avoid over pressure) and will take in air during emptying to avoid imploding the tank.
 - Bitumen storage tanks are **NOT** pressure vessels and must **NOT** be pressurised or subjected to a partial vacuum.

Design of pipework

- During design of the storage tank installation ensure that pipelines are properly considered:
 - Minimise the number of sharp bends particularly 90° bends (bitumen can congregate in these areas)
 - Ensure the pipelines for the most viscous bitumen grades, hard grades and polymer-modified bitumens, are the shortest and straightest.
 - Make sure pipelines are fully insulated as a minimum.
 - Employ trace heating as required (see toolbox talk on Trace Heating of Bitumen Pipelines).
 - Check the vent pipe diameter is sufficient to effectively expel / intake air at the required rate to avoid over / under pressure in the storage tank.
 - If in doubt discuss the above with the storage tank manufacturer/supplier.

Bitumen Safety Documents

Guidance documents on a range of bitumen safety related subjects can be downloaded free from the Eurobitume website:

- UK Version of the 2018 Guide to Safe Delivery of Bitumen.
- Safety Showers
- Eurobitume Bitumen Burns Card
- Safety Footwear Risk Assessment for Bitumen Delivery Drivers
- Operational considerations for Hot Bitumen Storage Tanks and Off-loading Systems.
- Design and use of Ground Based Pumps (EBUK/MPA document).
- Safe Bitumen Tank Management (EBUK/MPA document).
- Returning Bitumen Storage Tanks to Service.

See also the Energy Institute Model Code of Safe Practice Part 11: Bitumen Safety Code

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Other Bitumen Toolbox Talks

The following toolbox talks can be downloaded free from the Eurobitume website:

- Bitumen Delivery Driver Induction
- Bitumen Discharge Permit
- Personal Protective Equipment
- Emergency Safety Showers
- Ground Based Pumps
- Trace Heating of Bitumen Pipelines
- Emergency Shutdown of Bitumen Delivery Vehicles
- 'Pocket' Guide to the Safe Delivery of Bitumen

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