Hitachi Zosen INOVA	LESSON LEARNED	
Hitachi Zosen Inova		

Environmental Incident: Community complaints and involvement of the Regulator as a result of odour from site			
Number	2021-02	**Date**	01.06.2021

Summary:

In April 2021, during the hot commissioning of an EfW Plant, A boiler was in the process of being heated for the first time. A vapour with an unpleasant odour was present in the boiler hall and the louvres on the roof of the boiler hall were opened to ventilate the hall.

Later that day, the site was notified by the Regulator and the Local Authority that complaints relating to the odour had been received from the community downwind of site (over 2km from site). Hot commissioning was stopped until a risk assessment of the odour and a mitigation plan was developed.

Outcomes

The vapour and odour results from the decomposition of the resin binding the rockwool insulation (Knauf Insulation Power-Tek WM660 GGN) and is known to occur when certain insulations are heated for the first time. The binder (ECOSE) used in this case is an inert polymer bonding agent derived from plant starches. The binder is composed of renewable bio-based materials and was selected to avoid the phenolic resins and formaldehydes found in traditional binders on the market.

On heating the boiler for the first time and the insulation reaches above 150oC, the ECOSE binder decomposes causing the vapour and the strong odour.

As a non-hazardous substance there are no short- or long-term exposure limits set for the vapour in the UK or any other country. Furthermore, this substance is classified as not environmentally hazardous or a marine pollutant.

Although the vapour/odour is classified as non-hazardous and relatively short in duration, it can be strong and unpleasant in the immediate vicinity due to the large surface area of insulation on each boiler unit and associated pipework. The high sensitivity of the local community towards the Plant and intensity of the unpleasant odour to those downwind, albeit for short duration and frequency, resulted in a “moderate adverse” off-site impact.

Mitigations

The following mitigations were put into place prior to continuing hot commissioning.

1. Community Liaison took place involving the client.
2. Scheduling heating of the next boiler so that odour intensity peak was at night-time when least likely to cause a nuisance to neighbours.
3. Keeping louvres of boiler hall closed and extracting air through temporary activated carbon filters installed on the roof (see photos below).
4. Slowing down the rate of heating of boiler to reduce odour intensity in accordance with decomposition rates advised by manufacturer (noting however this will result in a longer duration of potential odour nuisance in terms of hours).
5. Contracting an odour consultant to monitor odour downwind of the plant during the peak of the odour.

To minimise the effect on workers, uppers levels of the boiler hall (where the vapour/odour was worst) were barriered off to limit access to essential work only.

Incident Classification: Level 2 Environmental Incident

Photo 1: Boiler Hall Roof prior to Temporary Activated Carbon Filters being installed

Photo 2: Temporary Sealed Canopy over a roof opening with scaffolding to secure shelter during high winds. Replacement filters (once filter media is spent) shown to left of photo

Root Causes and Contributory Factors

- Type of insulation / binding agent used: Whilst verbal evidence indicates this vapour/odour was also present during previous hot commissioning of three other plants using ProRox WM 960 and Knauf Wired Mat WM 640 (but no ECOESE binder) insulation. Indications are it was not evident during hot commissioning at a plant using PAROC insulation.
- Knowing that this odour was going to occur, but failing to communicate this to site team and subsequent failure to:
  - notify local community of potential for this odour and its non-hazardous nature
  - put in place mitigations to reduce odour intensity and impact.

Lesson Learned

- Consider potential for odour during the insulation selection process. For projects with sensitive receptors nearby / in urban areas procure an insulation that releases minimal odour and no hazardous vapour when heated.
- For remote sites with no sensitive receptors nearby, an insulation which releases odour or non-hazardous vapour may be selected if there are strong commercial or technical reasons.
- If odour is likely, implement mitigations listed above (e.g. closing louvres, slowing down the heat up process and / or filtering airflow from the boiler hall).

Every Lesson Learned is an opportunity to avoid recurrences.
What have you done to avoid a similar incident on your project?