

When Disaster Strikes: Insulation Disaster Recovery

INTRODUCTION

If your plant was shut down or damaged by flooding, natural disaster or fire, you need to be sure the insulation in your facility is still functional before restarting the plant. Pipe and vessel insulation plays a critical role in refineries and chemical processing plants, helping to save energy, control process temperature and protect workers. Insulation failure can result in injury, fire danger, material waste and equipment damage. So if you have experienced an incident in your plant, here are steps you can take to safely restart.

INSPECT FOR WET INSULATION

If insulation has gotten wet due to flooding or the aftermath of a fire, you need to inspect your insulation to make sure it is still functioning properly.

- Thoroughly wet calcium silicate or perlite insulation may be left in place on piping that will operate at 400° F or greater if the jacket is still structurally secure and the insulation is not deformed or sagging. Heat up the system gradually to allow vapor to escape slowly and minimize the risk of damage to the insulation and pipe.
- Saturated fibrous insulation will sag, leaving the top of horizontal pipe under-insulated. If the insulated pipe appears to be out of round with a tear-drop or pear shape, the waterlogged insulation is sagging and must be replaced. Insulation on vertical runs which show evidence of jacket “ballooning” or rupture should also be replaced.
- Fibrous insulations should be the first priority in corrosion inspections, particularly if they have been exposed to salt water, or other high chloride chemicals.
- Polyisocyanurate (PIR) insulation is a closed cell product and it will absorb water slowly. This also means that it will be slow to dry. If the PIR insulation is immersed in water and for a longer time, it is unlikely that it can be dried out properly and it should be replaced.
- If it is possible to sacrifice a couple of elbow segments, they can be cut open to allow the entire thickness of insulation to dry properly. The elbows must be measured and fitted properly on the pipe after all of the insulation has dried to make sure they still fit after the wetting and drying process.
- In all cases, if the insulation has only been exposed to a little surface moisture and it can be completely dried, it is reasonable to continue to use it. However, if the water contains chemical impurities or microorganisms, then the specifier or insulation contractor should be consulted to determine if the insulation can still be used.

CHECK FOR CORROSION UNDER INSULATION

Corrosion under insulation (CUI) is a constant concern so if your plant has been exposed to excess water, it's important to inspect for CUI in the future.

- Calcium silicate or perlite insulations are manufactured with anti-corrosive silicates that help prevent corrosion even if the insulation gets wet.
- Fibrous and cellular glass insulations should be the first priority in corrosion inspections, particularly if they have been exposed to salt water, or other high chloride chemicals.

PERFORM SHORT-TERM REPAIRS

Certain types of repairs can be performed quickly and effectively to help get the facility running again.

- Where damage to the insulation has exposed the pipe, consider installing FSK-faced mineral fiber or fiberglass flexible insulation as a temporary fix. This repair will reduce energy consumption and protect personnel from injury. This type of insulation can be quickly installed, and when properly sealed will serve until a permanent insulation installation can be scheduled.
- Cracks or breaks in calcium silicate or perlite insulation can be repaired using high-temperature accessory adhesives or cements. Johns Manville distributors carry a complete line.

INSPECT MECHANICAL COMPONENTS

The mechanical components in your insulation also need to be inspected before you can safely restart your facility.

- If there is any visible damage to insulation, it should be replaced.
- Bands that hold the insulation jacketing in place should not be loose or sagging. A broken band is an indication that the insulation is water-logged.
- Replace jacketing that is loose or torn.
- Ruptured jacketing is a sign of severe mechanical damage or saturated insulation and should be replaced or repaired only after addressing the root cause.
- Inspect the pipe hangers to ensure that the saddles supporting the insulated pipe are in place.
- Consider the traffic pattern of the restoration and maintenance workers: piping runs where heavy foot traffic can be anticipated should be insulated or reinsulated with calcium silicate (although we do not recommend that personnel walk on pipes). It's important to perform the proper calculations to determine if a higher density of PIR should be used. This rigid insulation stands up to mechanical abuse and delivers long-term insulation performance.

CONCLUSION

Unfortunately, disasters do happen. But if you take the correct steps, you can restart quickly and safely. For help with using, repairing, or replacing industrial insulations, call Johns Manville at 800-866-3234 or visit www.jm.com/industrial. With a complete line of calcium silicate, perlite, microporous blanket, and mineral fiber insulations and accessories, Johns Manville is uniquely positioned to help you make intelligent insulation decisions so you can get your plant back in service quickly.



717 17th St.
Denver, CO 80202
(800) 866-3234
JM.com

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