



SAFETY ALERT

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TITLE:

Jetting drains and sewer in cold weather

INDUSTRY SECTOR:

Drains and Sewers

TARGET AUDIENCE:

Contractors, hire companies and operatives

ORIGINAL SAFETY ALERT ISSUED BY

HSE

INTRODUCTION

The HSE has advised the WJA it is investigating a fatal water jetting incident involving the sudden, uncontrolled, and violent movement, whip, or recoil of a hose during cold weather conditions.

This safety alert advises on the steps to be taken to minimise risks from uncontrolled hose movement and ensure that frost protection procedures and engineering control measures are adhered to during periods of cold weather.

BACKGROUND

Some manufacturers of water jetting equipment provide facilities for anti-freeze to be added to water supplies to prevent the build-up of frost or ice during periods of cold weather. Other manufacturers of water jetting equipment, that do not provide facilities for anti-freeze, recommend that during periods of cold weather:

1. Before travel at the end of jetting activities, the operator shall empty the water from the water jetting equipment.
2. Post travel, the operator shall suitably and sufficiently restrain or anchor the delivery hose end fitting in the onboard protective device, or measure, such that the hose end points to a safe area.
3. With the end hose fitting restrained or anchored, the operator may fill and pressurise the water jetting system until water discharges constantly from the hose.

During periods of cold weather

- Frost and icing precautions can vary based on machine type, for example the adding of antifreeze (usually towable units and van packs), night heaters or heat tracing (normally van packs) or purging with air from either 80 bar compressor cabinets. To purge air from pump filtration systems and hoses (usually lorry mounted units), ensure that your procedures are appropriate for the machine type and always remove restrictions (nozzles, accessories etc) when flushing and/or purging the system once thawed out.
- It is foreseeable that, if a water jetting system is filled with water (no anti-freeze) and pressurised, frost or ice build-up travelling in front of the water through a hose forms an ice slug or projectile that ejects suddenly and violently from the hose end, resulting in the hose's uncontrolled movement, whip, or recoil.



- When water reservoir or tank levels are low, frost and ice may build up within the unit during periods of cold weather.
- The sudden, violent ejection of an ice slug or projectile from a pressurised hose may travel some distance away from the hose.
- Frost protection procedures and measures place reliance on the operator to restrain or anchor the hose end fitting and direct it towards a safe area.
- Any water discharged onto pedestrian or road surfaces may freeze, generating a risk to persons or vehicles.

Onboard frost protection measures

- May include such devices as a manual vice anchor fitting for connection to the hose end fitting, whip-check style hose restraints, etc.
- May include grit, salt or other suitable ice prevention material.

Operator training – frost protection procedures

- Refer to the frost precaution guidance within the WJA CoP [3].
- Operators require training in frost protection procedures.
- Operators should be able to reference frost protection procedure information and instructions for all equipment.
- Operative training should be formally recorded.

Personal protective equipment

The WJA CoP [1] identifies PPE as the ‘last resort’ because it is the last line of defence and only protects the wearer without changing the level of hazard present. Other control measures may be needed in addition to PPE and may reduce the level of protection needed from the PPE.

ACTION REQUIRED

Owners and users of water jetting equipment shall:

1. As recommended within the WJA CoP [2], ensure risks are reduced to the lowest reasonably practicable level by taking preventative measures in order of priority i.e., elimination, substitution, engineering controls etc.
2. Ensure that engineering controls (frost protection measures) mitigate and safeguard against the risk of uncontrolled hose movement, whip, or recoil in the event of frost or ice build-up during pressurised water filling activities.
3. Ensure that suitable and effective engineering controls (frost protection measures) are of sufficient strength, be suitably robust, be maintained in an efficient state, in efficient working order and in good repair on every water jetting system.



4. Ensure frost protection information and instructions for all equipment specify the safe direction the hose end fitting should be directed to when restrained or anchored before system filling or pressurisation.
5. Ensure that frost protection information and instructions are provided with all water jetting equipment.
6. Ensure both the emptying and filling of water jetting equipment is formally recorded during periods of cold weather.
7. Operator training should be conducted and formally recorded before periods of cold weather.
8. In conjunction between the equipment manufacturer and owner, written guidance should be provided with all equipment stating the minimum safe level/volume of water within the onboard reservoir or tank that resists the formation of frost or ice during periods of cold weather travel or storage.
9. Owners and users of jetting equipment shall adhere to the equipment manufacturers' instructions for emptying or blow down of and filling of water and its pressurisation within the system during periods of cold weather.
10. As recommended within the WJA CoP [1], appropriate PPE (as identified within the risk assessment) should be provided and always worn during the water jetting activity including during the start-up and pressurisation of the system.
11. During periods of cold weather, water discharged onto pedestrian access or road access surfaces should be prevented from freezing, or icing, by using suitable grit, salt, or other suitable ice prevention material.
12. Refer to the frost precaution guidance within the WJA CoP [3].

RELEVANT DOCUMENTS

- [1] Section 7.0 - Water Jetting Association Code of Practice - For the use of water jetting in drains and sewers and surface preparation up to 275 bar (4000 PSI) and 73 Lpm (16 IMP gpm) 2022 ISBN – 1 874278 04 7.
- [2] Appendix 6 - Water Jetting Association Code of Practice - For the use of water jetting in drains and sewers and surface preparation up to 275 bar (4000 PSI) and 73 Lpm (16 IMP gpm) 2022 ISBN – 1 874278 04 7.
- [3] Section 10 - Water Jetting Association Code of Practice - For the use of water jetting in drains and sewers and surface preparation up to 275 bar (4000 PSI) and 73 Lpm (16 IMP gpm) 2022 ISBN – 1 874278 04 7.