SAFE CLEANING PROCEDURES FOR TRUCK MOUNTED MIXING DRUMS

The Health and Safety Executive for Northern Ireland (HSENI) are instructing **ALL Concrete Operators** to review their current risk assessment and safe system of work for cleaning the interior of truck mounted mixing drums.

Concrete Operators should eliminate the need to enter the mixing drum to perform cleaning activities where possible.

Truck mounted mixing drums require regular maintenance and cleaning to ensure their ongoing effective operation. Customary practice within the Concrete Industry is to 'wash out' the mixing drum at the end of the working day. This is achieved by adding water into the mixing drum, rotating the drum and releasing the mix through the discharge chute located at the rear of the mixer into a dedicated wash-out bay.

Over time the interior of the mixing drum can become coated in hardened concrete. Normal wash out procedures are inefficient in removing this hardened material. Workers often therefore enter the mixing drum via the hatches located on either side of the drum and mechanically remove the concrete from the interior. This cleaning operation presents a significant health and safety hazard to the individual inside the mixer.

Concrete Operators MUST consider whether this work can be completed without the need for entry into the mixer-this is the safest and preferred option.

Removal of the hardened concrete using a high pressure water jet system eliminates the need for individuals to enter the inside of the mixing drum and removes the risk of a serious injury or fatality.

Where access into the mixer is required, this must be strictly controlled and carried out in accordance with an appropriate **safe system of work** (SSOW). Workers must be provided with adequate information, instruction and training, and the correct equipment for the job. Adequate control measures must be in place and the work activity supervised.

This information sheet details the key considerations which must be incorporated into any safe system of work for cleaning the interior of truck mounted mixing drums.

BEST PRACTICE

Technology is now available that eliminates the requirement for individuals to enter the mixer drum to remove hardened concrete.

A high pressure, boom mounted, water nozzle is inserted through the back of the mixing drum. The nozzle is tilted close toward the back of the mixing blades for efficient cleaning.

The volume of concrete that can be removed from one truck mounted drum mixer using this method.

SAFE SYSTEM OF WORK- REQUIREMENTS

Confined Space Entry

The interior of a truck mounted mixing drum is classified as a **confined space**. Truck mounted mixing drums are substantially enclosed and there is a foreseeable risk of serious injury when adequate control measures are not implemented during cleaning activities. Every employee entering the drum must have completed confined space training. Employees posted outside the mixer to assist, or those nominated as a 'spotter', must be trained in confined space rescue. Employees must be both competent and medically fit to enter the confined space.

Further information on confined spaces can be found on the HSENI website at: HSENI Confined Spaces

Effective isolation and lockout

Both the truck and the mixing drum must be adequately locked out in order to prevent either the truck or drum becoming energised whilst cleaning is being carried out. Unexpected start-up of the mixer can cause serious injury or death. Where the drum remains mounted on the truck, operators must lockout the cab and engine. This can be achieved by disconnecting the battery, locking the cab door, placing signage on the cab door to notify persons that cleaning activities are currently taking place inside the mixer and ensuring the keys to the truck are retained by the person performing the cleaning activities.

Drum access hatches

Hatches on either side of the mixing drum must be removed to allow for access/ egress and for ventilation purposes. Should the drum rotate, these hatches can present an entrapment area. Following isolation and lockout, where there is any residual risk of the drum rotating, adequate measures must be taken to secure the drum and prevent it from moving whilst the worker is inside. The drum must never be repositioned or rotated with the worker inside.

Adequate arrangements must be in place to enable safe access and egress into and out of the drum. The use of ladders will not be acceptable. Ladders are not suitable in the event of rescuing a person from inside the drum. A suitable platform level with the entry and exit height of the drum must be used. The platform must be sized to allow for more than one person to occupy it and must provide adequate room for the evacuation of a person from the drum. The integrity of any access platform used must be checked pre-use to ensure it is safe for use.

Emergency Procedures

An effective emergency plan must be in place for the evacuation of personnel from inside the mixer should a serious injury or health event occur. The emergency plan must be periodically tested, and those involved in rescue operations must receive adequate information, instruction and training to enable them to perform this task.

Operators need to consider the equipment required to rescue a person from inside the drum and ensure workers are of suitable physical proportions to enter, exit and be rescued from the drum. Lone working whilst cleaning the inside of the drum must never be permitted.

Dust

The breaking of concrete inside the drum will generate significant levels of dust including respirable dust and silica. Inhalation of this dust by the worker poses respiratory health risks including occupational asthma with longer term exposures increasing the risk of developing COPD, silicosis and lung cancer. Damping down the interior of the drum with water prior to breaking concrete can assist in reducing the amount of airborne dust. Water nozzles attached to the tool can deliver a continuous spray of water on the breaking tool. Adequate ventilation must be maintained during cleaning activities by ensuring both hatches on the mixer drum are fully open and a fan should be used inside the drum to adequately remove stagnant, dust laden air and allow fresh clean air in. As a minimum, an FFP3 dust mask must be worn by the employee. A power assisted respirator may be required for tasks of a longer duration and where exposure is higher.

Noise and Vibration

The use of tools such as a breaker, hammer drill etc. to break out hardened concrete within the drum can create significant noise levels. Where practicable, equipment with lower noise levels should be chosen. Job rotation must be considered in order to reduce individual exposure time and tools used must be adequately maintained. Employees involved in the work activity, both inside and outside the drum, must be provided with adequate hearing protection suitable for the level of noise generated.

Employees are further exposed to vibration of the hands, arms and body when using these tools. Operators must ensure they select the most efficient tools for the cleaning task, adequately maintain tools and implement job rotation to reduce exposure time for individuals.

Falling Concrete

During the cleaning process there is the potential for concrete material located above the worker to become loose due to vibration, fall, and strike the worker causing injuries. At the start of the work activity, the worker must carry out a visual inspection of the inside of the mixer to check for any significant areas of loose concrete or overhangs. These should be safely removed before any further work. Ensuring the worker is not working above waist height will assist in mitigating the potential for falling debris. The mixer should be positioned to ensure that the work activity can be carried out in the 'down-hand position'. Regular removal of concrete from floor level must also take place to reduce the risk of slips, trips and falls. Any sharp edges must be covered using appropriate materials i.e. padding, foam or similar.

Temperature

Cleaning inside the drum on a hot sunny day can expose employees to high internal mixer temperatures. Individuals will react differently to temperature extremes depending on their body type and physical capabilities. Operators should consider whether work can be carried out in cooler weather. Where work is carried out during warmer weather employees must be given adequate rest breaks and reminded to stay hydrated. Job rotation should be implemented to reduce time spent inside the drum for employees.

Lighting

Adequate lighting must be provided to ensure the cleaning process is adequately illuminated. Any artificial lighting used inside the mixer must not exceed 110 volts and be supplied via a suitable transformer which must be earthed.

Personal Protective Equipment (PPE)

Suitable PPE must be provided to all employees involved in the work activity. Employees entering the drum must be provided with (as a minimum) safety boots, disposable lightweight overalls, safety gloves, FFP3 dust mask, adequate hearing protection, safety goggles and head protection. Additional PPE may be required dependant on the task, i.e. anti-vibration gloves, knee pads and a power assisted respirator. Employees required to wear tight fitting respiratory protective equipment (RPE) must have undergone a face fit test and be trained in how to use, wear, maintain and store RPE.

Permit to Work (PTW)

A permit to work is a formal, written, safe system of work to control hazardous activities. Prior to entry into the mixer, a permit to work must be issued by an authorised person to those performing the cleaning activities. The permit must detail the work to be done and the precautions to be taken. The permit must be issued, checked, and signed off as being completed by someone competent to do so. The person issuing the permit must be a person who is not involved in undertaking the work. The permit must be signed off and closed when the work is complete.