

Concrete, Cement and Mortar

Burns, dermatitis, silica and the physical risks of pours and formwork

Wet cement is highly alkaline. It causes serious chemical burns that workers often do not feel until the damage is done, and allergic dermatitis that can end a career. Dry cement and cured concrete produce silica dust. The physical work adds manual handling, entrapment and falls.

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1. Why wet cement is worse than people think

- Wet cement is strongly alkaline, typically around pH 12 to 13. That is comparable to oven cleaner.
- It causes full-thickness chemical burns, most often to knees, shins and feet where it gets inside boots or soaks through knee pads and trousers.
- The burn develops slowly. A worker kneeling in concrete may feel nothing at the time and have serious burns by the end of the shift. Skin grafts and amputations have resulted.
- It also causes irritant contact dermatitis, and allergic dermatitis from the hexavalent chromium content, which is permanent sensitisation — once sensitised the worker can never work with cement again.
- Cement products sold in the UK are required to be low in soluble chromium VI, and that reduces but does not remove the risk.

2. Controls

Risk	Control
Skin contact with wet cement	Waterproof gloves (nitrile, gauntlet length) and waterproof trousers or overalls. Waterproof boots with trousers OVER the boot, not tucked in.
Kneeling in wet concrete	Waterproof knee pads or a kneeling board. Never kneel directly in wet concrete, even briefly.
Cement in boots or gloves	Stop and wash immediately. Do not carry on to the end of the shift. This is the single most common route to a serious burn.
Washing facilities	Clean running water, soap and towels available AT the work area, not just in a welfare unit across the site. Emergency eyewash where splashing is possible.
Eye contact	Eye protection when pouring, pumping, vibrating or mixing. Eyewash available.
Dust from dry cement and cured concrete	See CON-02. Silica controls apply.

Dermatitis developing unnoticed	Skin checks as part of health surveillance, and workers trained to report redness, itching or cracking early.
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3. Physical risks of concrete work

Hazard	Harm	Controls	In place? Y/N
Concrete pump and placing boom	Struck by the boom, hose whip, blockage releasing under pressure	Trained operator, exclusion zone, never bend or kink the line, agreed signals, safe clearing procedure.	
Delivery vehicles reversing to the pour	Struck by vehicle	See the WTS pack — marshal, exclusion zone, segregation.	
Formwork and falsework collapse	Crushing, burial	Designed by a competent person, erected to that design, inspected and signed off before the pour. Never modified on the day.	
Working over or beside a pour	Falls into wet concrete, drowning in deep pours	Edge protection, no crossing on formwork, rescue arrangements.	
Reinforcement bar ends	Impalement, eye injury, cuts	Rebar caps on all protruding ends, eye protection, gloves.	
Vibrating pokers	HAVS, noise, entanglement	See CON-03. Limit trigger time, rotate the task.	
Power float and trowelling machines	HAVS, noise, entanglement, silica dust	Trained operator, PPE, dust control when grinding.	
Curing agents, release oils and admixtures	Skin and respiratory irritation	COSHH assessment per product, from the safety data sheet.	
Hot weather pours	Heat stress, rapid setting	Rest breaks, hydration, shade, plan the timing.	
Cold weather pours	Frost damage, slips, cold stress	Protection, gritting, appropriate clothing.	

4. Pre-pour checklist

Check	Done	By whom
Formwork and falsework inspected and signed off against the design		
Access and egress safe, edge protection in place		
Exclusion zone set for the pump or delivery vehicle		
Signals agreed with pump operator and delivery driver		
Washing facilities and clean water available at the work area		
Eyewash available		

Correct PPE issued — waterproof gloves, trousers, boots, eye protection		
Rebar capped		
Weather checked and acceptable		
Emergency arrangements briefed, including what to do about a cement burn		

IF CEMENT GETS ON SKIN OR IN AN EYE: wash immediately with plenty of clean water, keep washing, remove contaminated clothing and boots, and get medical advice for anything more than momentary contact. Do not wait until the end of the shift.

Assessed by	Signature	Date	Review date