

# SEVERE WEATHER EVENT

## Health, Safety and Wellbeing – Soils and Debris

Following the extreme weather event across the North Island there is an increased risk of migrating contamination. Soils and debris can become contaminated by substances in floodwaters and contaminated soils can be mobilised and deposited by floodwaters. The primary exposure route when the soils are wet is through direct contact and ingestion. When these materials dry, they can be mobilised to air and become an inhalation risk. Contamination sources can include: untreated sewage, stock effluent, landfill leachates, industrial wastes, hazardous building materials such as asbestos, hazardous substances such as petroleum products and agriculture chemicals, offal and carcasses. Soils are also host to numerous bacteria, fungi and virus that can cause infection and contain silica and other minerals that can be harmful if inhaled. To manage this risk, it is requested that all work plans be reviewed and amended as required to ensure the risk of exposure to the community and our workers is effectively managed. Always keep up to date and follow advice from Te Whatu Ora Health NZ.

### Exposure Risk Management Expectations

#### Assess the Risk

While all soils have the potential to be contaminated and controls need to be in place when working with soils, it is important to assess the risk to drive the best solutions.

- Establish the potential sources of contamination
  - Assess where the material and flood waters have come from (i.e. overslip material from native vegetation slopes is likely not contaminated with untreated sewage while materials deposited overland floodwaters has a higher potential for contamination etc.)
  - Settlements and urban areas
  - Industrial zones
  - High density livestock
- Screen and monitor by visual inspection, for evidence of significant contamination such as odours, building debris, discolouration, carcasses, oil sheen etc.
- Assess each site for potential to impact nearby receptors such as residents and communities and prioritise dust management in these areas.

#### Workers

Controls should be effective at minimising exposure to soils, however the potential for infection is increased where workers are vulnerable or susceptible. Identify workers that:

- have compromised immunity
- have a high-risk medical condition
- are older

A suitable duties plan should be in place for workers that are at a higher risk of infection. Review the exposure risk and develop a monitoring plan and assess potential vaccination requirements

All workers are to be informed of the potential health risks and provided with adequate training to effectively implement controls including the use and maintenance of PPE and decontamination. Exposure monitoring plans are to be in place and records are to be available on request to demonstrate worker competency.

#### [People at higher risk of severe illness](#)

### **Site Establishment**

To effectively manage the exposure risk, each work site is to be established with sufficient equipment and resources to support the implementation of the exposure prevention controls.

- Provision of adequate hygiene facilities
- Sufficient water and disinfection supplies
- Clear establishment of “clean” and “dirty zones” to differentiate areas of higher exposure to areas that should be considered a low risk
- Plan for workers to manage potentially contaminated clothing to avoid secondary exposure and contamination of clean zones
- Dedicated PPE to avoid contact direct contact with soils
- Assess the exposure risks and identify specific respiratory protection zones and activities. Minimum RPE P2/N95 properly fitting respiratory protection provided and used in all RPE Zones. Workers to be trained in use and maintenance/disposal
- Adequate waste facilities
- Sufficient potable drinking water meeting [NZDWQS](#) to be provisioned for each worksite. Delivered water should be done from potable sources and transport only
- Response plan and resources to manage discovery of significant or unknown contaminants or soils risk
- Provide hazard information such as use of signs and communication to potentially effected persons

### **Dust Management**

A dust management plan is to be in place for each worksite.

- Dust suppression such as water carts, use of surfactants, sweeping and removing silt from high risk trafficable areas
- Consider misting or spraying of areas where appropriate
- Vehicle and plant wash equipment
- Information and warning signs for road users on potential for dust

- Monitoring plan included dedicate monitor and actin plan

### **Work methods**

Work methodology planning must aim to minimise the exposure of workers to potentially contaminated soils.

- Plan Work to minimise personnel contact with soils (e.g. use of plant vs manual operations etc.)
- Assess migration potential of methods (sluicing, digging, stripping etc.)
- Use plant with built in exposure controls in higher risk operations (i.e. closed cabs,)
- Establish plant dirty and clean zones and operator dismount areas
- Develop plant and vehicle cleaning plans and establish onsite
- Use of hydrovac
- Wet sweeping

### **Stockpiles**

Slips and flooding and subsequent remediation will produce a significant amount of material to be managed. While urgent, the management of this material is to be conducted in consideration of the potential risk.

- Assess material to be stockpiled for contaminants of concern
- Assess stockpile locations for suitability:
  - Nearby receptors people and environment
  - Cultural consideration of location and materials source
- Assess the risk of transporting materials and prepare haul plans (minimise carting distances and footprint for loading unloading)
- Plan truck movements to minimise driving over exposed soils
- Use covered trailer or truck or keep damp but not running, leaching. Any wet material must be transported in sealed trailer units to prevent spilling.
- Stockpile management plan to control exposure risks including dust management
- Record of source of materials and amounts transported, where in the area deposited
- Screening of materials for suitability for stockpiling and possibly significant contaminants
- Engage with stakeholders on coordination of stockpiles and management of potentially contaminated materials
- Ensure sweepers are available to reduce tracking of material.

## Dust monitoring

A measure of the effectiveness of the exposure controls is the level of dust at the work area.

- Develop dust monitoring plans with clear trigger levels and actions.
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References:

<https://healthhb.co.nz/support/kia-mataara-be-careful-around-dust-from-floodwater-silt-mud-and-soil/>

[working-with-silt-or-contaminated-soil-after-cyclone-gabrielle](#)

[Civil Defence cyclone-gabrielle-february-2023](#)

[Z19 environment-and-sustainability-in-our-operations](#)

[contractor-health-and-safety-expectations](#)

Site Establishment Review			
No.	Description	Responsible Person	Status / Update
1.	Material assessed for potential contamination		
2.	Adequate water supply in place for the site		
3.	Hygiene facilities and supplies available		
4.	Clean and dirty zones established and clearly demarcated for personnel and vehicles		
5.	Risk information including signs and billboards in place		
6.	Information communicated to affected persons		
7.	Exposure prevention PPE/RPE provisioned and maintained		
8.	Workers trained on use and maintenance of PPE/RPE and exposure controls		
9.	Waste facilities provided with segregation of potentially contaminated materials		
10	Screening and discovery protocols in place for significant contamination		
11	Stockpile management plan in place including a vehicle movements plan		
12	Soil and debris tracking plan (source, temporary stockpile, disposal) and data upload to RAM		
13	Worker exposure monitoring being undertaken		
14	Dust monitoring plan in place and implemented		
15	Emergency response plans including for exposure events		

This work guide has been prepared to highlight unique and increased risks related to severe weather and specifically soil and debris and is not intended as comprehensive risk management guide. It should be used to supplement good practice guidance for construction risk management. Other risks include, but not limited, are working around utilities, mobile plant, working around traffic and heavy vehicles, driving for work, etc.