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Chapter 10

Non-Sediment Contaminants

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**EROSION AND SEDIMENT
CONTROL GUIDELINES**

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10 NON-SEDIMENT CONTAMINANTS

Non-sediment contaminants consist of chemicals and materials used on site that directly or indirectly discharge into receiving environments (including adjacent land) from site activities. Some land disturbing activities, such as construction activities can generate a variety of non-sediment contaminants, many of which are listed in Table 10-1.

10.1 Non-Sediment Contaminant Effects

As discussed in Chapter 3 non-sediment contaminants can have both acute effects (eg sudden severe exposure, potentially causing serious injury or death) or chronic effects (prolonged or repeated exposure causing longer term health and fertility problems), as well as impacting on ecosystems, creating imbalances that lead to a change in species composition, for example algal blooms.

Non-sediment contaminants can have the following effects:

- offensive odours.
- impacts on people's health.
- discolouration of water.
- reduced oxygen levels in water causing death of aquatic wildlife.
- excessive algal growth and blooms.
- death or injury of aquatic wildlife - the occurrence of dead or distressed fish and eels can be an indicator of severe contamination and should be addressed immediately.
- cause cancer or mutations in animals and humans leading to death or reproduction issues.
- bioaccumulation affecting organisms feeding on contaminated food sources.

There are some basic steps that can be taken to reduce the risk of spills and discharge of non-sediment contaminants –even on small sites, including consideration of materials used, their storage, disposal and contingency planning in the event of spills (refer Table 10-1).

10.2 Materials storage

When storing materials, the following steps should be taken to minimise risk:

- Store hazardous materials in a designated area with appropriate signage.
- Always consider storing materials in a covered area.
- Follow manufacturers' instructions for storage of materials.
- Hazardous material storage on site should be minimised.
- Materials should be stored in secondary containments, such as a bunded area made of impervious materials and drained to an appropriate area when rainwater ponds within the bund.
- Fuel tanks should be bunded to store 110% of the fuel tank capacity.
- Temporary storage areas should be located away from vehicular traffic, near the construction entrance and away from waterways or storm drains.
- New Zealand Material Safety Data Sheets should be supplied for all materials stored on site. Chemicals should be kept in their original labelled containers.

- Store chemicals, drums or bagged materials on a pallet to keep them off the ground and where possible, in secondary containment.
- If drums are kept uncovered, store them at a slight angle to reduce ponding of rainwater on the lids to reduce corrosion.
- Prepare an emergency response plan in case of a spill or accident.

10.3 Materials Use and Onsite Activities

- Whenever possible, undertake site activities that could result in non-sediment contaminants in a designated area within sediment controls. These should be identified as Trade Activity Zones (TAZ) on the Erosion and Sediment Control Plan.
- Follow manufacturers' instructions for use of materials.
- Use chemicals and materials carefully and clean up any spilled product. Do not hose the material into a reticulated stormwater system or waterway.
- Hazardous materials should be handled as infrequently as possible.
- Keep tools and machinery well maintained to avoid leaks.
- Refuelling and maintenance should only be undertaken in designated areas with sufficient stormwater protection.



Figure 10-1 Site fuel tank with bunding to contain fuel in the event of a spill

10.4 Disposal

- Properly dispose of, or recycle, unused portions or containers once they are empty.
- Only clean equipment, machinery and tools in areas that drain to sewer.
- Clean up and appropriately dispose of treated wood sawdust and wood off-cuts.
- Make it easy for staff to appropriately dispose of wastes by placing waste and recycling facilities at appropriate locations.

10.5 Contingency Planning

- Assess what materials and wastes will be expected on site to allow for planning of: waste minimization; provision of appropriate wash down, recycling or waste disposal facilities; provision of appropriate spill kits; and determining staff training requirements.
- Identify and protect sanitary sewer lines that may exist on the site to avoid damaging them.
- The site should have spill clean-up kits appropriate to the materials used on site with relevant training of staff.
- Ensure all subcontractors and staff are aware of their responsibilities.

Further information on managing hazardous substances is available from the EPA website (www.epa.govt.nz).



Figure 10-2 Good example of a port-a-loo placed in a location with consideration also given to erosion and sediment controls

Table 10-1 Common Potential Non-Sediment Contaminants and their Sources

Work activity/product	Contaminant sources	Contaminant indicator	Specific contaminants	Mitigation approach
Adhesives and paint	Adhesives, glues, resins, epoxy, PVC cement Caulks, sealers, putty, sealing agents Coal tars (naphtha, pitch) Household and commercial paint	Oily sheen or other discolouration from some product	Phenolics, formaldehydes, asbestos, benzene, ethyl benzene, toluene, xylene, phenols, and naphthalene	Store materials in a location that is not subject to rainfall contact Use adhesives carefully and clean up any spilled material Properly dispose of containers once they are empty Only clean brushes/applicators in areas that drain to sewer
Asphalt paving	Hot and cold mix asphalt where special coatings are used	Depends on coatings used	Depends on coatings used	New coated paving should not discharge directly to a reticulated system or to a receiving environment Drainage from coated asphalt should go to a stormwater treatment system designed to capture contaminants of concern.
Cleaners	Cleaners, ammonia, lye, caustic sodas, bleaching agents and chromate salts	Discolouration, odour	acidity/alkalinity	Store materials in a location that is not subject to rainfall contact Use cleaners carefully and clean up any spilled product. Do not hose the material into a reticulated stormwater system Properly dispose of containers once they are empty Only clean brushes/applicators in areas that drain to sewer
Concreting	Cement	Discolouration	Alkalinity (high pH)	Concrete truck chutes, pumps and internals should be washed out only where it will not drain to stormwater or waterways. Unused concrete remaining in truck and pump should be returned to the originating batch plant or can be pumped out to an appropriate location, left to set then broken up and disposed to clean

Work activity/product	Contaminant sources	Contaminant indicator	Specific contaminants	Mitigation approach
				<p>Hand tools should be washed off only into formed areas awaiting installation of concrete or asphalt where it will not drain to stormwater or waterways</p> <p>Equipment that cannot be easily moved, such as concrete pavers, should only be washed in areas that do not drain directly to receiving environments</p>
Flocculation	Sediment Pond Flocculants	Overly clear water in sediment pond, green pond water (low pH)	Poly Aluminium Chloride (PAC)	<p>Maintain good flocculation management procedures (refer section Error! Reference source not found.)</p> <p>If pH drops below 6.5, take the pond offline and stabilise the pond pH with lime (calcium hydroxide) before reconnecting the decant system.</p>
Nutrients	Disturbed site soils Cut vegetation (grass/weed clippings, tree prunnings/clearance) Fertilisers	Excessive growth of filamentous green algae. Little discolouration	Nitrogen Phosphorus Magnesium Sulphur	<p>Limit soil disturbance were possible and implement effective erosion and sediment control practices to reduce nutrient export from the site</p> <p>Ensure cut/cleared vegetation is disposed of where it will not enter stormwater or waterways</p> <p>Ensure fertilizer application when stabilizing sites is done to the recommended concentration and using appropriate methods to ensure excess fertilizer runoff does not occur into stormwater or waterways</p>
Sanitary waste	Portable toilets Sewer overflows Sewer / septage pipe disturbance	Visible sanitary waste, odour	Faecal bacteria and, viruses including pathogens, BOD, portable toilet chemicals (eg. Glutaraldehyde)	<p>Secure and protect portable toilets to avoid knocking them over</p> <p>Have portable toilets serviced as needed</p> <p>Identify and protect sanitary sewer lines that may exist on the site to avoid damaging them</p>

Work activity/product	Contaminant sources	Contaminant indicator	Specific contaminants	Mitigation approach
Treated wood	Leachate from stored treated timber Sawdust and wood off-cuts Formwork	Greenish tinge to water, sawdust and cut wood pieces	Copper Chromium Arsenic	Keep treated timber covered to keep it dry and minimise leaching of contaminants. Where possible also store on an impervious surface, not draining to stormwater (eg the plastic covering used during delivery) Where possible, minimise the use of treated timber for temporary forming Clean up and appropriately dispose of treated wood sawdust and wood off-cuts
Vehicle and equipment operation, use and maintenance	Oil, lubricants, diesel, petrol, degreasers, coolants, hydraulic fluid, refrigerants	Oil sheen, sediment, black residue	Total petroleum hydrocarbons, polyethylene glycol (a coolant used in radiators) benzene and derivatives, ammonia	Fuel tanks should be banded to store 110% of the fuel tank capacity Refuelling and maintenance should only be undertaken in designated areas with sufficient stormwater protection Keep machinery well maintained to minimize leaks Procedures and practices should be implemented to avoid the discharge of lubricants or coolants to storm drains or receiving systems Have spill prevention and control measures and training in place