

Industrial Stormwater Management

Best practice guidelines
to minimise business risk and
to protect our environment



Why is stormwater an issue for your business?

Rain running off your business premises travels via the gutters, grates and pipes into local streams, lakes, harbours and onto beaches. If there are contaminants in it such as oil, paint, sediment or other such elements off your site, it can kill aquatic life and pollute the environment where we swim, fish and play. Keeping stormwater clean is important to your business and everyone's lifestyle. Stormwater drains should only carry clean rainwater so your runoff must be free of pollutants.

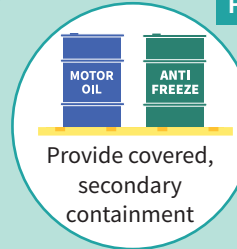
The health of your employees is also important so staff training around preventing and treating stormwater contamination is essential.

- Reduce the risk of expensive cleanups
- Reduce the risk of reputation damage and negative media attention
- Avoid any possibility of litigation
- Contribute to maintaining clean recreational areas in and around waterways for our residents
- Reduce adverse effects of pollution during flooding

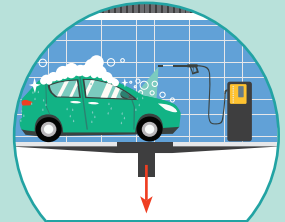
Trade waste is contaminated and must be fully contained and discharged to the sewer or to storage tanks and disposed of by a reputable contractor.

Good housekeeping

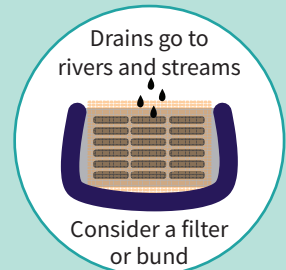
Prevent spills



Clean and store tools and equipment properly



Waste management



Protect stormwater

What could pollute our stormwater?

Pollution Sources

Contaminants

Materials shipping and receiving

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| <ul style="list-style-type: none"> Leaks, spills, and residues from unloading, loading, transfer, and distribution of materials and products Leaks from faulty piping connections Erosion and tracking from unstabilised soils and roads | <ul style="list-style-type: none"> Hydraulic and automotive fluids Sediment Site-specific chemicals |
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Materials handling, processing, and storage

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| <ul style="list-style-type: none"> Leaks, spills, and residues from processes Materials storage areas (e.g., tanks, drums, bottles, bags, bins, stockpiles) Generation of leachate Particulate and fugitive emissions from furnaces and processing equipment | <ul style="list-style-type: none"> Hydraulic and automotive fluids Acids, alkalis Metals such as copper, lead, nickel, and zinc Oxygen demand Sediment, airborne particulates Site-specific chemicals |
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Vehicle and equipment maintenance and storage

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| <ul style="list-style-type: none"> Leaks, spills, and residues from fluids transfer and fuelling Storage areas (e.g., batteries, tyres, air and oil filters) Corroding equipment, chipping paint, and galvanized metal | <ul style="list-style-type: none"> Hydraulic and automotive fluids (e.g., oil, lubricants, transmission fluid, brake fluid, antifreeze, coolant) Fuel (e.g., gasoline, diesel, fuel additives) Acids, alkalis, metals |
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Painting and sanding

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| <ul style="list-style-type: none"> Paint and thinner spills and overspray Paint application wastes including empty containers Sanders Emissions from ventilation systems | <ul style="list-style-type: none"> Paint, varnish, solvents Metals such as lead, zinc, cadmium, chromium, and mercury Sediment, particulates |
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Cleaning and washdown

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| <ul style="list-style-type: none"> Rinse water and washwater from vehicles, equipment, drums, and tanks Parts cleaning Cleaners, degreasers, and process residues Poorly designs and/or undersized washpads Faulty washpad diversion valves | <ul style="list-style-type: none"> Solvents, detergents Sediment, acids, alkalis, metals Site-specific chemicals |
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Waste management and disposal

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| <ul style="list-style-type: none"> Leaks, spills, residues, and leachate from waste and scrap storage areas Improper waste disposal On-site treatment facility | <ul style="list-style-type: none"> Acids, alkalis, oxygen demand, metals Pathogens, biocide Site-specific chemicals |
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Building and grounds maintenance

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| <ul style="list-style-type: none"> Pest management Landscaping and fertilisers Litter Build-up of residues on hardstand Poorly maintained stormwater infrastructure and erosion controls | <ul style="list-style-type: none"> Pesticides, fertilisers, insecticides, herbicides Oxygen demand, organics Sediment, metals Nutrients (e.g., ammonia, nitrate, phosphorus) Hydraulic and automotive fluids including fuel |
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Illicit stormwater network connections

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| <ul style="list-style-type: none"> Floor, sink, sewage, or process wastewater drains connected to stormwater network | <ul style="list-style-type: none"> Oxygen demand, nutrients, organics Pathogens Site-specific chemicals |
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What can you do to minimise risk?

Materials shipping and receiving

- Conduct material loading/unloading in designated areas outside of drainage pathways.
- Avoid loading/unloading materials in the rain or provide cover for loading docks.
- Enclose trailer ends at truck loading/unloading docks (e.g., using overhangs or door skirts).
- Inspect deliveries for damaged goods prior to unloading; address punctures/leaks immediately.
- Provide berms, kerbs, or vegetated swales around the perimeter to limit run-on.
- Close stormwater drains in the receiving area during transfer of hazardous materials using drain seals/guards/plugs or a shutoff valve. Direct spills to a collection point for recovery and disposal.
- Conduct loading/unloading on a covered, impervious pad to enable easy cleanup of spilled materials. Slope the pad to convey spills and leaks to proper containment and treatment.
- Ensure hose connection points are inside containment areas and drip trays are deployed where spills may occur outside of the containment area.

Materials handling, processing, and storage – general

- Confine material handling and storage to designated, labelled areas outside of drainage pathways and away from surface water and high traffic areas.
- Handle and store materials indoors when possible. Use an impervious pad to facilitate cleanup of spills and leaks. If materials are outside, enclose/contain/cover the area and elevate stored materials on pallets to prevent contact with runoff.
- Put portable containers on pallets. Limit stack height of containers/drums. Provide straps, plastic wrap, or equivalent around stacked containers for stability.
- Provide sufficient aisle space for safe handling around stored materials to avoid damage.
- Use taps and funnels to reduce material spills.
- Stabilise areas surrounding handling and storage areas. Pave areas where vegetative or other stabilisation methods are not practicable.
- Minimise flows to handling, processing, and storage areas with berms, kerbs, or vegetated swales.
- Monitor and restrict access to chemical storage areas to prevent theft, vandalism, and misuse.
- Maintain an organised inventory of materials. Limit purchasing, storage, and handling of materials. Eliminate or reduce quantities of hazardous materials and waste by substituting less hazardous materials. Properly dispose of materials that are no longer in use.
- Use an end-of-pipe treatment (e.g., sand filter, interceptor) where contaminants may be present in stormwater discharges.
- Inspect handling and storage areas regularly. Replace or repair leaking tanks, containers, connections, valves, transfer lines, and pipes that may carry or store chemicals or wastewater. Schedule maintenance and integrity testing.

Materials handling, processing, and storage – solids

- Follow all general handling and storage GMPs in addition to these below.
- Store materials in enclosed silos, hoppers, buildings, or covered piles (e.g., under tarps or awnings).
- Remove residues from finished products before storage or transport.
- Regularly remove spilled material and dust using mobile sweepers, scrapers, and/or scoops.
- Control airborne contaminants by collecting and filtering dust, fumes, and exhaust generated using systems such as baghouses. Place tubs around vents and stacks to capture settling particles.
- Sweep and/or apply water or materials for dust control that will not impact stormwater.

Materials handling, processing, and storage – liquids

- Follow all general handling and storage GMPs in addition to these below.
- Store liquids indoors or under cover. Use compatible containers that are rigid and durable, corrosion resistant, non-absorbent, leakproof, and equipped with a close fitting cover.
- Clearly label drums, tanks, and containers with their contents.
- Provide secondary containment such as dikes or portable containers with a height sufficient to contain the greater of 10% of the total enclosed tank volume or 110% of the largest tank volume.

- Ensure drain valves for containment areas are maintained in the closed position. Check containment areas prior to discharge. Clearly tag valves to avoid human error and only use manually operated pumps or valves in containment areas.
- Use spill troughs, double-walled storage tanks, check valves, drip trays, and level indicators where applicable to prevent leaks, spills, and overflows.
- Provide kerbs or posts around transfer pumps to prevent collisions from vehicles.
- Handle and store reactive, ignitable, or flammable liquids in compliance with requirements.
- Keep absorbents and other cleanup materials readily available for immediate cleanup of spills. Use dry methods rather than hosing down the area. Sweep up spent absorbents promptly.

Vehicle and equipment maintenance and storage

- Follow all materials handling and storage GMPs in addition to these below.
- Use dedicated handling equipment to reduce tracking of materials to other areas. Store equipment that has residues or sediment on it under cover or indoors.
- Conduct fuelling (including transfer from delivery trucks) on a concrete pad since asphalt is not chemically resistant to fuels. Collect stormwater runoff and provide treatment or recycling.
- Train personnel on proper fuelling techniques. Do not overfill fuel tanks after pump shutoff.
- Store and repair vehicles and equipment indoors or under cover.
- Check for leaks and use drip trays. Empty drip trays before they overflow and dispose of the contents properly.

- Remove parts from liquids slowly to avoid spills. Drain fluids from parts prior to disposal or recycling. Use drip trays, drain boards, and drying racks to direct fluids into a tank for reuse.
 - Promptly transfer used fluids to the proper, labelled container.
 - Dispose of greasy rags, oil and air filters, batteries, spent fluids, and degreasers properly.
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Painting and sanding

- Follow all materials handling and storage GMPs in addition to these herein.
- Paint and sand indoors when possible. Enclose outdoor areas including ground surface with tarps, plastic sheeting, and/or drip trays to contain overspray, debris, and spills.
- Prohibit outdoor painting and sandblasting in windy weather.
- Mix paints and solvents in designated areas away from drainage pathways and surface water, preferably indoors or under cover.
- Use water-based paints, coatings, and solvents with low volatility and VOCs when possible.
- Use high transfer application techniques (e.g., brushing and rolling) that reduce overspray.
- Dry empty paint cans under cover prior to disposal.
- Wash paint brushes, rollers, and other equipment in utility sinks that drain to Trade Waste.

Cleaning and washdown

- Clean empty drums/containers and contaminated wooden pallets in a Trade Waste area. Ensure that there is no contact of residues with precipitation or runoff. Store pallets under cover and/or on a concrete pad.
 - Perform all vehicle, equipment, and parts cleaning on a contained, concrete washpad.
 - Clean accumulated dust and residues from vehicles, equipment, and surfaces to minimise transport and tracking of contaminants around the site.
 - Use waterblasters only in enclosed areas where washwater can be fully contained.
 - Use an oil-water interceptor or equivalent to remove solids and hydrocarbons from washwater.
 - Avoid liquid cleaners and/or use minimal amounts of phosphate-free, biodegradable detergent.
 - Do not allow washwater to enter stormwater drains or surface water. Treat and discharge washwater to Trade Waste or reuse it on-site.
 - Washpad diversion valves can fail and cause illicit stormwater discharges. Contact Trade Waste if you have this type of valve to ensure it's operating correctly.
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Waste management and disposal

- Manage all process wastewater and washwater according to Trade Waste approval.
- Minimise run-on of stormwater into the area by grading it for runoff. Direct contaminated runoff and any leachate to on-site treatment or the wastewater network. Capture particulates with sediment traps, vegetated swales, retention/detention basins, or equivalent.
- Store residues and waste in enclosed and/or covered areas.

- Do not pour liquid waste into floor drains, sinks, or sumps. Collect liquid waste in a properly labelled container and dispose of it using a licensed waste hauler.
- Use covered containers for solid wastes such as skips or drums that are durable, corrosion resistant, non-absorbent, and leak-proof.
- Regularly dispose of waste material from air quality systems and other operations.
- Avoid cross-contamination of waste streams (e.g., separate solvents, treated wood, rubbish, etc).
- Limit storage time of waste to prevent degradation and generation of leachates.
- Ensure hazardous and solid waste are separated and disposed of properly. Non-hazardous substances that are contaminated with a hazardous substance are considered hazardous.
- Label and track the production of waste material (e.g., used oil, spent solvents, batteries).
- Reduce waste by recycling and/or reusing materials where possible.

Building and grounds maintenance

- Maintain and clean out drains, channels, roof gutters, and underground pipes regularly to prevent blockages and allow proper drainage.
- Clean out all outlet controls such as sumps, witches hats, oil-water interceptors, and media filters regularly to maintain their effectiveness and prevent overloading.
- Apply fertilisers and pesticides during dry, calm weather and only if needed. Use natural/organic substances. Adhere to manufacturer's application guidelines (i.e., do not exceed requirements).

- Apply insecticides during breeding months and only if needed.
- Compost green waste away from drainage pathways or dispose of it properly.
- Ensure roof downpipes are fully intact and cannot receive runoff or spills from potentially polluted areas of the site.

Erosion from stockpiles, soils, and roads

- Retain as much vegetation as possible along streams and roads.
- Wash sand and gravel before storing it outside. Consolidate stockpiles to minimise surface area exposed to precipitation.
- Stabilise soils and stockpiles by seeding, mulching, and/or placing geotextiles on inactive areas. Maintain ground cover to minimise sinking and erosion of soils.
- Divert stormwater away from areas susceptible to erosion using dikes, swales, and berms.
- Reduce sediment transport using sediment traps, silt fences, outlet protection, detention basins, or equivalent.
- Clean wheels, truck bodies, and other equipment to minimise sediment tracking. Do not allow washwater to enter stormwater drains or surface water.
- Stabilise high traffic areas including vehicle entrances, exits, loading, unloading, and vehicle storage areas with concrete pads, gravel, and pavement where practicable.
- Use rumble strips and gravel aprons at access points to minimise off-site sediment tracking.
- Sweep and/or apply water or materials for dust control that will not impact stormwater.

Illicit stormwater discharge

- Only clean rainwater is permitted to enter the stormwater network.
- Know where all sumps and drains discharge to. Perform smoke or dye testing to investigate unknown drainage pathways.
- Plug building floor drains that have stormwater or unknown connections. If necessary, install a sump that is pumped to wastewater or on-site treatment.
- Update and display facility piping schematics that accurately depict all site drainage.
- Stencil sumps with drainage pathway (e.g., wastewater or stormwater) to prevent accidental discharges into the stormwater network.

Inspection and training

- Establish an Environmental Management Plan. Train employees in spill prevention and response, good housekeeping, cleanup, materials management, and waste disposal procedures. Conduct regular site inspections to ensure procedures are implemented properly.
- Regularly check for leaks, corrosion, proper operation of equipment, and effective control measures. Replace worn or malfunctioning parts promptly.
- Schedule and perform routine preventive maintenance of all equipment.
- Train and employ competent and careful staff including forklift operators and drivers.

The Council holds consents from ECan to discharge clean stormwater to waterways on your behalf. However, if your site poses an unacceptable risk to the environment, it may be excluded from our consent coverage in order for us to limit our liability. Your business would then need to obtain a consent directly from ECan at your cost, or cease discharging into our network.

Additional penalties may occur for non-compliant businesses in accordance with Resource Management Act enforcement measures such as:

- An abatement notice
- An infringement notice
- An enforcement order
- Alternative Environmental Justice
- Prosecutions and formal legal action



We are here to help you reduce your environmental risk

We can support your staff training programmes.

For more info:

Environment Canterbury

 03 365 3828

 tools.ecan.govt.nz/eppg

 escscanterbury.co.nz

Report a spill:

 Pollution hotline 0800 765 588

Contact us:

Three Waters and Waste

 03 941 8999

 info@ccc.govt.nz

 ccc.govt.nz/industrial-stormwater

The Council gratefully acknowledges the use of information compiled by U.S. EPA's Office of Water for the preparation of this document.