

Trade Waste

Cleaner Production for the Metal Fabrication & Finishing Industry

www.logan.qld.gov.au

Fact Sheet

What is Cleaner Production?

The United Nations Environment Programme (UNEP) defines Cleaner Production as *“the continuous application of an integrated environmental strategy to processes, products and services to increase efficiency and reduce risks to humans and the environment”*.

Council encourages Industrial or Commercial Businesses to manage their daily operating costs, increase saleable products and profit margins whilst using fewer raw materials. Cleaner Production aids organisations to comply with environmental legislation. Adopting a Cleaner Production approach, can reduce liability, regulation, monitoring cost and enhance control over your business.

Cleaner Production Benefits

Cleaner Production can lead to economic savings by:

- Reducing or eliminating wasted raw material; or
- Reducing water and energy consumption; or
- Reducing or eliminating liquid and solid waste disposal costs; or
- Improvement in product quality.

Cleaner production helps reduce the cost of trade waste. Working towards cleaner production will greatly help you to comply with stricter environmental legislation. It will also bring the benefits of reduced liability, reduce regulation, reduced monitoring costs, potentially reduced licensing charges and better control over your business.

For generators, an effective Trade Waste Cleaner Production program should include:

- A description and a clear objective of achievable targets for discharge quantity and quality;
- Assessing how materials enter your business and are processed up to delivery to customers (flow diagram);
- Examination of waste prevention and recycling options including conservation of water;
- A program involving the development of waste reduction and pre-treatment aimed at reducing contaminant levels in waste and wastewater (an action program may be required, detailing expected outcomes, timelines and milestones); and
- Provisions for monitoring, recording and reporting waste quantity and quality for continual improvement and to reduce waste costs.

Becoming an Eco Efficient Metal Fabrication Business in Logan

Trade waste effluent from metal fabrication may contain metals, cyanides, processing chemicals, acids (nitric, sulphuric, hydrochloric, hydrofluoric, alkalis, plating solutions containing metals (cadmium, zinc, nickel, copper, chromium) and ion exchange resin reagents. These substances can affect the health and safety of Council sewer workers, damage our infrastructure network, cause environmental harm, affect treatment processes and the ability to produce quality recycled water and biosolids. Some of these chemicals have the potential to cause explosions.

Who can adopt cleaner production practices?

Any industrial or commercial business that fabricates, treats and polishes metal can adopt cleaner production industry practices. Cleaner production strategies can be employed by:

- Fabricated Metal Product Manufacturing
- Metal Coating and Finishing including, but not limited to, the following processes:
 - ➔ Electroplating
 - ➔ Galvanising
 - ➔ Anodising
 - ➔ Powder Coating
 - ➔ Polishing

When to adopt cleaner production?

Strategies to prevent or reduce waste entering the sewer system are encouraged in the planning and designing phase of the setup of any metal fabrication or finishing business. By implementing strategies at an early stage there are long-term economic savings in reduced conveyance and treatment costs for your business.

The installation of a properly sized, approved best practice pre-treatment device, together with an acceptable maintenance program in accordance with the conditions of the trade waste approval shall be deemed to provide a satisfactory effluent with respect to the general limit parameters of the sewer admission limits unless the trade waste generator is requested to develop an effluent improvement program.

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Housekeeping tips for the metal fabrication industry

Introducing certain internal practices can improve the quality of your trade waste effluent. Removing metal wastes, soluble oils, galvanising acids, soluble heavy metal wastes and cyanide wastes from your effluent stream at the source helps prevent your pre-treatment system or treatment process being overloaded. It will also help reduce corrosion of sewer connection points within your property and of Council's infrastructure and facilitate meeting sewer admission limits.

Plan & Design

Planning production layouts and designing process flows can improve general efficiency and facilitate waste segregation.

- Develop waste minimisation, water conservation, and energy conservation plans with objectives and targets.
- Document process flows and regularly review for continual improvement.
- Improving bath layouts can result in reductions of drag-out and rinse water consumption.
- Appropriate signage for staff encouraging best practice methods.

Metal Cleaning and Pre-treatment

- Desmut metal objects too large for immersion.
- Standardise the drip or hang time.
- Install drip trays or drainage boards between dip tanks.
- Allow object to hang at an **angle** for enhanced drainage.
- Recycle spent rinse water back to treatment tank and then add more concentrate.
- Consider installing multiple rinse tanks connected to an ion exchange column.
- Have drain holes fabricated in product at an adequate size for faster and improved drainage.
- Return drag-out to the plating bath to maximise metal recovery.

Join the "Logan Business Eco-Efficiency Program"
<http://www.environment.gov.au/archive/settlements/industry/corporate/eecp/industry.html>

Logan City Council acknowledges the support of the Eco-efficiency Group who have provided information included in this fact sheet. <http://www.ecoefficiencygroup.com.au/>

Metal Finishing Ideas to consider

- Consider spray or fog rinses over plating baths to conserve water.
- Air agitate metal work in rinse baths to improve rinse effect and conserve water.
- To reduce dragout, prepare baths using demineralised water.
- Regularly analyse plating solutions and measure weight loss in acid bath and weight gain in chromate tank.
- Regularly monitor pH levels and anode area for electroplating processes.
- Reuse cleaning waste for next or other cleaning process.



Wastewater Treatment

- Regulate flow of water through treatment plant to allow reaction time for conversion and precipitation of metals.
- Regular maintenance and calibration of treatment plant instrumentation by trained personnel.
- Utilise low current electrolysis to remove metallic impurities.
- Use activated carbon filter to remove dissolved organic impurities and solids.
- Separate grease film from degreasing baths through centrifugation or filtration.
- Filtration will separate suspended solids or sedimented particles from treatment baths.

For more information

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