Fact sheet: Key environmental issues in manufacturing

There are many things that businesses in the manufacturing industry can do to reduce negative environmental impacts and develop more sustainable approaches to their businesses.

This table provides an overview of the main sustainability issues and the role of the manufacturing sector.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Scope of problem</th>
<th>Implications – globally and in Australia</th>
<th>Implications for the manufacturing sector</th>
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</thead>
</table>
| Air quality    | • Greenhouse gas emissions from burning fossil fuels (predominantly coal for electricity and oil for transport).  
                 • Production, transport and agricultural emissions.  
                 • Polluting emissions such as particulate matter (fine particles of solids or liquids).  
                 • Ozone-depleting substances.  
                 • Offensive odours. | • Climate change, with a range of anticipated effects, eg on agriculture and tourism. Australia will be particularly affected by climate change.  
                                                                 • Human health issues, particularly for the elderly, the young and people with bronchial conditions.  
                                                                 • Increase in the hole in the ozone layer and dangerous radiation reaching the earth.  
                                                                 • Lower quality of life for people living close to pollutant source. | • The manufacturing sector is a significant contributor to greenhouse emissions through industrial processes. For example, cement manufacturing contributes 7–8% of global carbon dioxide (CO₂) emissions.  
                                                                 • Communities near manufacturers want to know that industrial processes will not degrade local air quality. They want action by the industry to ensure air is safe.  
                                                                 • Manufacturers are subject to legislation and regulation relating to air emissions. |
| Water quality  | • Nutrient effects, eg fertiliser and phosphate run-off.  
                 • Sewage pollution. | • Pollution affects the chemistry of waterways, particularly the oxygen levels upon which aquatic life depends. | • Mining sectors, chemical manufacturing and laboratory operation sectors have particular liquid waste issues. |
### Sustainable Manufacturing Toolbox
Fact sheet: Key environmental issues in manufacturing

<table>
<thead>
<tr>
<th>Natural resource supply</th>
<th>Toxic emissions into waterways, eg heavy metals and insecticides.</th>
<th>Hot water emissions into waterways from factory outflows.</th>
<th>Reduced environmental flows, eg from irrigation.</th>
<th>Turbidity, eg when water is not clear.</th>
<th>Groundwater contamination, eg from organic wastes, heavy metals and sending contaminated materials to landfills.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural resource supply</td>
<td>Contaminated waterways harm the wildlife within them. This effects the ecosystem upon which we all depend.</td>
<td>Contamination of drinking water impacts on human health.</td>
<td>Communities near manufacturers are increasingly seeking reassurance and action that industrial processes will not degrade local water quality.</td>
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<td>Natural resource supply</td>
<td>Increased costs as resources run down, eg petrol costs.</td>
<td>Increasing competition for resources, eg water access in Australia between different industries and between urban and regional users.</td>
<td>Increased costs of production due to rising resource prices (eg oil and water) weighed up against increased competition from cheap labour markets.</td>
<td>Increasingly limited availability of key process inputs (eg water and electricity as they become more expensive) makes product redesigns and the use of renewable resources such as solar and wind power a necessity.</td>
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<td>Natural resource supply</td>
<td>Increased difference in standards of living between those with access to resources and those without.</td>
<td>(Ultimately) wars are fought over resources.</td>
<td>Some procedures are inefficient and can waste resources, which increases production costs.</td>
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| Waste management | Landfill issues.  
|                 | Toxic waste management and limited disposal options.  
|                 | Leachate issues, eg toxic chemicals leaching out of landfills.  
|                 | Embodied resource issues.  
|                 | Electronic waste, or e-waste, eg computers, keyboards and printers).  
| **Landfill space** | Landfill space is increasingly rare in urban areas so waste must be transported further, leading to higher disposal costs.  
| **Leachate** | Certain toxic materials can't be thrown out safely. Industry often has to contain them.  
| **Embodied resources** | Black markets have developed for the illegal disposal of toxic waste.  
| **Electronic waste** | Markets have emerged in developing countries such as India and China to handle the waste from the developed world.  
| **Organic and toxic materials** | Harmful substances from organic and toxic materials sent to landfills can leach into the groundwater.  
| **When we throw something away** | When we throw something away, we dispose of all the resources (including embodied resources) that have gone into making and distributing the item.  
| **Corporate responsibility perceptions** | Corporate responsibility perceptions – often companies are blamed for social problems because resources aren't doled out fairly.  
| **Waste to landfill costs** | Waste to landfill costs are increasing, particularly for industry, as landfill sites become rarer and governments try to encourage businesses to reuse and recycle more widely.  
| **Embodied resources in waste materials** | Embodied resources in waste materials are effectively a loss of resources for an industry.  

### Land and wildlife
- Soil erosion.
- Acidification.
- Chemical contamination, eg pesticides.
- Agricultural and industrial waste.
- Deforestation.
- Biodiversity preservation.

### Noise
- Affects individual workers.
- Affects the wider community.

### Environmental Issues
- Decrease in quality of soil for farming.
- Reduction in oxygen-producing trees with ability to soak up carbon dioxide.
- Loss of diversity of flora and fauna (wildlife) – loss of life – dependent ecosystems and also disruption to food chains.
- Organic and waste management issues, eg toxic waste storage.

- This applies mainly to the mining sector.
- Clearing of land for mining, large-scale earthmoving and production of toxic tailing dams are of environmental concern to land and wildlife management, and human quality of life.
- Noise affects the hearing of individuals and communities.
- Noise is becoming an increasing source of pollution in modern life.
- Noise pollution affects quality of life.

- Most manufacturing businesses use heavy machinery, which creates noise above safe human levels. At the individual level, this is an occupational health and safety issue.
- At the wider community level, manufacturers are subject to laws relating to the timing of noisy activities.

Adapted from the NSW Department of Environment and Climate Change and Water, 'Standards for sustainability–manufacturing knowledge and skills for Sustainability Resource Manual'. Used with permission.