



MINISTRY OF ENVIRONMENT AND NDU

ENVIRONMENTAL GUIDELINE No. 26

Manufacture of Soaps and Detergents

1.0 Purpose of guideline

This environmental guideline for the setting up of a plant for the manufacture of soaps and detergents has been prepared by Ministry of Environment & NDU to ensure that all environmental issues are duly taken into consideration by stakeholders.

2.0 Nature of development

The manufacture of soaps and detergents consist of a broad range of products. The principal forms of products are bars, powders and liquids.

The *manufacture of soaps* involves the reaction of fats and oils with inorganic water soluble bases, this process is also called saponification. Glycerin is also produced in the process. The resulting products from the above process are separated and dried through vacuum driers to form dry soap pellets. In the final step, the dry soap pellets are passed in a line mixer where fragrance and colorants are added. The resulting mixture is then extruded and cut into bars.

For the *manufacture of solid detergents*, dry and liquid ingredients are combined into slurry, or thick suspension, heated and pumped into a tower where is it sprayed under high pressure to produce small droplets. The droplets fall through a current of hot air, forming hollow granules when they dry. The granules are then sieved to achieve uniform size. Other heat sensitive ingredients may be added after these processes.

For the *manufacture of liquid detergents*, dry and liquid ingredients are added and blended to a uniform mixture using mixers.

3.0 Potential impacts

The major environmental issues associated with the manufacture of soaps and detergents are odour, noise, air pollution, generation of hazardous wastes and effluent disposal. The different aspects, impacts, nuisances related to such activities are listed below:-

Activity	Aspects	Impacts/ Nuisances
Construction phase		
Site preparation / Construction of buildings (where applicable)	- Generation of excavated soil , debris and construction wastes - Use of heavy machinery	-Dumping into barelands, water bodies and drains -Dust, noise and mud -Visual impacts

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Operation phase		
Manufacturing process	<ul style="list-style-type: none"> - Generation of solid wastes - Generation of hazardous wastes - Generation of effluents - Generation of odours - Poor housekeeping 	<ul style="list-style-type: none"> - Visual impacts - Risk of contamination of water courses - Nuisance to the nearby inhabitants - Rodents and pests
Generation of steam through the use of boilers	<ul style="list-style-type: none"> - Combustion of fuels 	<ul style="list-style-type: none"> - Air pollution - Noise pollution
Storage of fuels and chemicals	<ul style="list-style-type: none"> - Risk of spillage 	<ul style="list-style-type: none"> - Soil contamination - Contamination of water bodies - Fire hazards
Movement of vehicles	<ul style="list-style-type: none"> - Generation of noise - Generation of smoke 	<ul style="list-style-type: none"> - Nuisance to the neighbourhood - Air pollution

4.0 Siting of activity

The plant for the manufacture of soaps and detergents should be located in industrial areas.

5.0 Environmental Conditions

The major environmental issues are **odour, noise, air pollution, generation of hazardous waste and effluent disposal** and the following conditions shall be observed:

- (i) All electric motors such as stand-by generator and air- conditioning devices shall be housed in soundproof enclosures to keep noise level within permissible limits as per the Environment Protection (Environmental Standards for Noise) Regulations 1997. The noise exposure limits as per the above regulation are as follows:

Industrial noise		Neighbourhood noise	
7:00 – 21:00	60*dB(A) Leq	7:00 – 18:00	60 dB(A) Leq
21:00 – 7:00	55*dB(A) Leq	18:00 - 21:00	55 dB(A) Leq
		21:00 – 7:00	50 dB(A) Leq

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* A tonal character adjustment of +5 dB(A) should be applied to the measured value where the noise has a definite continuous note such as a whine or hiss.

- (ii) Flue and odorous gases shall be channeled through ducts connected to a chimney stack which shall be designed as per good engineering practices.
- (iii) All gaseous emissions from the plant shall be within permissible limits as per the Environment Protection (Standards for Air) Regulations 1998. The stack emissions standards applicable to this undertaking are:

Pollutant	Standard
(i) Smoke	Ringelmann No. 2 or equivalent opacity (not to exceed more than 5 minutes in any period of one hour)
(ii) Solid particles	200 mg/ m ³
(iii) Sulphuric acid mist or sulphur trioxide	120 mg/ m ³ as sulphur trioxide
(iv) Hydrogen sulphide	5 ppm as hydrogen sulphide gas
(v) Nitric acid or oxides of nitrogen	1 000 mg/ m ³ as nitrogen dioxide
(vi) Carbon monoxide	1 000 mg/ m ³ as carbon monoxide

- (iv) Wastewaters shall be collected, treated and disposed of.
- (v) All hazardous wastes shall be collected and disposed of as per Environment Protection (Standards for Hazardous Wastes) Regulations 2001.
- (vi) A contingency plan as provided for under section 30 (3)(a) of the Environment Protection Act 2002 shall be prepared and implemented to combat any case of accidental spillage of fuel or chemicals.
- (vii) Operational procedures shall be established for handling, storage of chemicals in order to minimize accidents, risk of pollution and waste.
- (viii) All solid wastes generated from the factory shall be collected and disposed of. Packaging wastes including plastic and carton boxes shall be reused or recycled.
- (ix) All petroleum products and other chemicals shall have secondary containment. Areas enclosed by secondary containment shall be maintained, and all accumulated water within secondary containment areas should be disposed of. The secondary containment shall have a storage capacity of 110 % of the capacity of the storage tank.
- (x) No nuisance by way of noise dust, air pollution shall be caused to the public and surrounding environment during site preparation, infrastructural works and during operation of the activity.
- (xi) The Department of Environment of the Ministry of Environment and NDU shall be informed in writing of the dates of commencement of works on site and operation of the activity for monitoring purposes.

6.0 Enforcement

Under Section 13 of the Environment Protection Act 2002, the enforcing agencies for

S. No	Environmental media/ pollutant	Enforcing Agency
1	Noise, odour	Ministry of Health and Quality of Life
2	Effluents	Ministry of Public Utilities
3	Solid wastes	Ministry of Local Government
4	Air pollution	Ministry of Environment

the different environmental medium or pollutants are as follows:

The above-mentioned enforcing agencies shall monitor compliance with the conditions falling under their purview.

7.0 Offences

Any person who fails to comply with any regulations/standards referred to in this guideline shall commit an offence and shall:

- (i) on a first conviction, be liable to a fine not exceeding 50, 000 rupees and to imprisonment for a term not exceeding two years.
- (ii) on a second or subsequent conviction, be liable to a fine not exceeding 100,000 rupees and to imprisonment for a term not exceeding 8 years.

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