

# **WASTE MANAGEMENT IN SEED PROCESSING AND TREATMENT PLANTS**

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# 1. WHY WASTE MANAGEMENT

- Seed processing and treatment produces solid, liquid and gaseous wastes.

- Each of these has its problems. We focus on maize seed.

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# 1.1. Solid Waste

- The main solid waste is excess maize cobs from the maize shelling process.
- It, as often happens, it is simply dumped on land in the vicinity of the factory it causes a number of problems

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- It lowers the aesthetic appeal of the environment.
- It is a source of obnoxious smell
- It harbors rodents that are a health risk in addition to being a nuisance
- It promotes proliferation of insects such as flies and mosquitoes that are known to be disease vectors.
- It is a fire hazard.
- It occupies valuable space

# 1.2 Liquid Wastes

- Liquid wastes in seed processing and treatment plants include:
  - waste water from cleaning operations and sewerage from washrooms and kitchens.
  - If not properly treated and disposed of waste water causes a number of undesirable effects.

- It lowers the aesthetic appeal of the environment.
- It causes obnoxious smells
- It promotes proliferation of insects that may be disease vectors.
- It lowers the quality of receiving water such as rivers and groundwater
- It lowers the level of dissolved oxygen in the receiving water and therefore adversely affects aquatic life such as fish.
- It may contain toxic chemicals that harm aquatic life, human beings and animals.

# 1.3 Gaseous Wastes

- Gaseous wastes from seed processing and treatment plants include:
- Flue gases from boilers, furnaces and standby generators as well as exhaust gases from aspiration, aeration and drying processes.
- Gaseous emissions cause a number of undesirable effects.

# Effects of gaseous emissions

- Eye and skin irritation
- Allergic reactions
- Lowered aesthetic appeal of the environment
- Lower visibility
- Increased green house gases such as carbon dioxide
- Increased acidic gaseous emissions such as sulphur dioxide



# 2. Waste Management

- **2.1 Solid Wastes**
- Maize cobs are often used as fuel for air heating in drying operations.
- This may involve direct mixing of incoming air with the hot products of combustion.
- This leads to a load of suspended particulate matter in the drying air that finds its way to the drier exhaust gases.
- There is however, always excess maize cobs to be disposed of. Dumping on land is not recommended. It could be sold as a by product of converted to other higher value by-products.

- One such by-product is electricity that can be generated by burning all the maize cobs in a high pressure boiler and using the steam to generate electricity as well as provide process heat such as drier air heating.
- Ash from the furnace can be given out or sold as a soil conditioner or dumped in a landfill.
- Dust from seed cleaning operations should be collected and sold as a by-product to be used in feed manufacturing.

## 2.2. Liquid wastes

- Waste water can be discharged to the municipal/city waste treatment plant or an in-house waste treatment plant.
- Sewerage can be discharged to the municipal/city waste treatments plants or suitably designed and constructed septic tanks
- Wash waters containing treatment chemicals should be incinerated.

# Gaseous Emissions

- Boiler/furnace and generator flue gases should be managed by ensuring that there is efficient combustion and by designing and constructing the chimney correctly.
- Exhaust gases from aspiration, aeration and drying operations should pass through cyclones to minimize dispersal of particulate matter to the environment.

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