



## ERA 43. Concrete Batching

### Environmental Protection Act 1994

#### DEFINITION>>

Concrete batching includes the production of 200 tonne or more of concrete or concrete products in a year by mixing cement with sand, rock, aggregate or other similar materials.

Concrete products include grout and mortar.

#### LOADING AND TRANSPORT>>

##### Minimise emission of dust

- Truck loading bays must be:
  - > roofed and enclosed on three sides for 'back in' type plant, or
  - > roofed and enclosed on two sides for 'drive through' type plant.
- Use water sprays or filtered dust extraction systems around gob hoppers and across open sides of enclosures.
- Specify speed limits on exposed road surfaces (< 40km/h).
  - > Erect barriers with kerbs and posts to discourage vehicle movement on unsealed areas.
- Regularly water unsealed roads (clean water @ 1-2 l/m<sup>2</sup>) to prevent nuisance from traffic movements.
- To minimise airborne dust seal, turf or cover the site with a dust suppressant such as compacted road base or aggregate use organic dust-binding agents.
- Never let trucks leave the premises with dust and or mud on the vehicle (e.g. where necessary wet down trucks). This will prevent dust and/or mud nuisance.

- Cover truckloads of sand or aggregate during transport if there is a possibility dust may be emitted.
- Regularly water sand and aggregate stockpiles to keep down dust emissions. This should be done in conjunction with an appropriate catchment and treatment system to contain runoff and leached water from the sprinklers.

##### Prevent contamination of water, soil and groundwater

- Never use waste oil or other contaminants on dirt roads as a dust suppressant or weed killer. This practice may lead to the site being notified as a possible contaminated site under the *Environmental Protection Act 1994*.
- Immediately clean up material spilt on a traffic area before it can be mobilised by vehicle movement.
- Regularly collect floor sweepings, dust, powder waste or absorbent clean up materials and place in a sealed bag prior to disposal in a sealed waste bin.
- Prevent and clean up any spillages or dust accumulation in driveways or sealed roads.

##### AGGREGATE STORAGE

##### Prevent nuisance dust

- Enclose stockpiles:
  - > on two sides for "drive over" inground storage bins, or
  - > on three sides for "reverse delivery" inground storage bins.
- Enclose above ground stockpiles with walls on at least three sides at all times.

Stockpile height must be at least 0.5 metres below the tops of the walls and at least 0.5 metres inside the open ends of the enclosures.

- > Cover raw material with a high dust generating potential in addition to using sidewalls.
- Use water misting sprays to keep aggregates damp. For batching plants with drive over receival bin site it is not considered practical to use water sprays and therefore all loads should be received in a damp state.
- Ensure water spray systems keep aggregates and yard areas damp.
- Handling practices for raw material with a high dust generating potential (e.g. crusher dust) must prevent dust nuisance.
- Never store sand and aggregates outside of the storage areas/bins.
- Cover sand and aggregates during long production intervals.

## **CONVEYOR SYSTEMS>>**

### **Prevent nuisance dust**

- Roof, and enclose on one side, the incline conveyors to overhead bins.
- Install spill trays under the conveyor system and clean them regularly.
  - > Install belt scraping devices on the head pulleys of the conveyor belts and regularly sweep away material. Recycle the removed material.
  - > Use water spray systems on conveyor systems to suppress dust.
  - > Minimise the drop height between conveyors.
- Maintain all areas directly beneath conveyor systems in a clean condition to avoid dust nuisance.

## **ELEVATED STORAGE BINS>>**

### **Prevent nuisance dust**

- Never load aggregate to within 0.5 metres from the top of the bin walls.
- Enclose swivel chute areas and transfer points that have the potential to generate dust.
- Partially or totally enclose bin openings to minimise wind generation of dust emissions.

## **AGGREGATE WEIGHING HOPPERS>>**

### **Prevent nuisance dust**

- Front-end loader type plants:
  - > must roof, and shroud (three sides) the aggregate weigh bins
  - > should dampen aggregates before transferring the load into the weighing bin
  - > partially or totally enclose overhead bins from the base of the overhead bin walls down to the aggregate weigh bins.

### **Prevent Nuisance Noise**

- Use self-cleaning hoppers that are coated internally with resin or other resilient material to dampen noise emissions from aggregate.
- Load fine aggregates first to reduce the noise made when loading coarse aggregate.

## **CEMENT AND FLYASH SILOS>>**

### **Prevent and control nuisance dust**

- Always use filters when venting silos to the atmosphere. Filters must be designed for maximum discharge rates from cement and flyash delivery trucks.
- Do not operate silo filters in excess of the manufacturers' specifications and rated capacity.
- Use a burst bag detector system that has ducting to ground level adjacent to the silo-filling pipe.
- Maintain filter systems in accordance with the manufacturers' recommendations.
- Keep spare filters on site at all times.
- Use Reverse Pulse filters rather than the 'green bag' type filters.
- Install:
  - > automatic level sensors and an alarm system to prevent over filling
  - > filling line shut off valves that close automatically when a high level of material is detected
  - > spring-loaded shut off valves to close if automated control systems fail
  - > test circuits for high level alarm and shut off valve operation. Operate test circuits prior to filling silos.

### **Prevent nuisance noise**

- Ensure that sensors and alarm systems used in day to day operation of the plant do not cause environmental nuisance.

### **CEMENT AND FLYASH WEIGH HOPPERS>>**

#### **Prevent and control nuisance dust**

- Install a dust tight seal between silo discharge chutes and the weigh hopper.
- Use a filter to vent to the atmosphere.

### **VEHICLE SERVICING>>**

#### **Protect humans and environment from hazardous effects of motor vehicle maintenance**

- Refer to 'ERA 21. Motor Vehicle Workshop Operations' fact sheet.

### **DUST AUDITS AND MONITORING>>**

#### **Monitor environmental performance**

- The site EMS should include regular audits of the effectiveness of control measures for dust generation. The frequency of audits (e.g. monthly or quarterly) will depend on the level of risk (e.g. near sensitive land uses including residential).
- Conduct dust monitoring using a suitable direct-reading instrument.
- Check or monitor monthly:
  - > dust fallout
  - > high volume sampling (24 hour) and/or
  - > respirable dust levels (PM10)
- Check and monitor background dust levels from other sources.