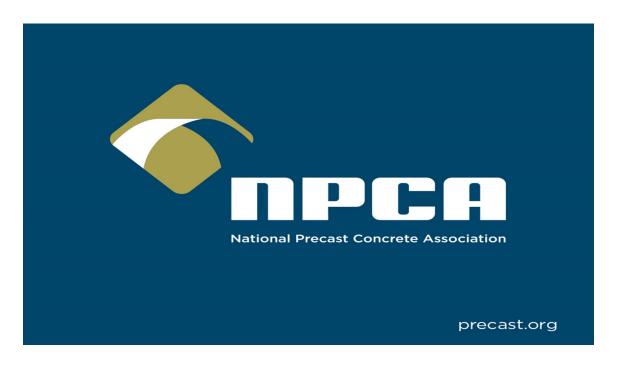# NPCA

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Silo Emissions- Environmental Quarterly Topic

Silo Emissions consist of the contents of the air escaping when being pumped off. As EPA states in AP42 Section 11.12:

Particulate matter, consisting primarily of cement and pozzolan dust but including some aggregate and sand dust emissions, is the primary pollutant of concern. In addition, there are emissions of metals that are associated with this particulate matter. All but one of the emission points are fugitive in nature. The only point sources are the transfer of cement and pozzolan material to silos, and these are usually vented to a fabric filter or "sock".

Many state, county, and city environmental enforcement agencies have regulations on silo emissions, permitting, and tests required. Contact your local agency to learn more about those. NPCA has furnished links to the state agencies at: https://precast.org/wp-content/uploads/2020/07/Common-Environmental-Acronyms-2020.pdf They are under the heading regulatory.

Compliance with applicable state and federal standards are important to avoid regulatory sanctions.
Limiting the impact of our industry on the environment is also important for the benefit of all our members.

Dusting

- Visible when pumping.
- Can be the result of leaks in filtration system, torn bags or filters, insufficient filtration system, over pressure when pumping off.
- Often results in material build up on silo and in filtration system housing.
- Detrimental to air quality.
- Direct contact can be a source of respirable silica exposure.
- Can raise iron and total suspended solid content of stormwater runoff.

Visual Emissions Testing

- Visual Emissions Testing (VE testing) is a requirement of the Clean Air Act (CAA) Title V.

- This test involves a certified observer watching the potential pollution source (silo over pressure valve and filtration system) while the source is in use (being filled).

- Noncompliance with these tests could result in penalties from the EPA or state environmental agency.

Filtration Implementation

There are many different options for silo dust filtration systems. Most systems use bag or cartridge filters. The most important aspect is to find what suits the needs of your batch plant.

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Silo Protection Systems

- Silo protection systems are even more varied than filtration systems.
- High level alarms measure the height of the silo contents and trip once it reaches a certain level.
- Over pressure systems measure the air pressure in the silo and trip once it goes over a set limit.
- Audio and/or visual alerts are common get operators to stop pumping.
- Inflatable bladders and pinch valves can prevent material from getting into silo if over pumping occurs.

The most important aspect is to find what suits the needs of your batch plant.

Fugitive Emissions

- Visible when pumping or batching.
- Can be the result of leaks in silo hatches, gasket deterioration in mixer, leaks in hoods, insufficient watering, damaged connections, or leaks in silo.
- Often start small but can lead to large scale emissions.
- Detrimental to air quality.
- Often closer to production floor.
- Direct contact can be a source of respirable silica exposure.
- Can raise iron and total suspended solid content of stormwater runoff.

Regular Inspections and Maintenance

- Filtration systems should be monitored regularly to ensure the filters do not have rips, too much build up, and are still properly installed to operate effectively. Thorough inspections while pumping is not going on as well as a visual inspection while pumping is recommended.

- Visually watching the batch and pumping processes should be done regularly to locate fugitive dusting in the process.

- The frequency of the inspections should be based on the amount of production the plant does.

- Cleaning of any build up will help prevent dust from becoming airborne.

- Documenting all inspections and maintenance can be helpful for tracking issues, proactive determination of possible approaching issues, and compliance investigations.