



Fugitive Dust, Particulate Matter and Air Quality

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What are we going to talk about?

- Definitions: Fugitive Emissions, Fugitive Dust and Particulate Matter
- Types of emissions sources: Point Source and Fugitive Sources
- Overview of Air Quality Regulations concerning Fugitive Dust
- What is Opacity? - How do you evaluate it?
- Fugitive Dust Control Program - When is it required?



What is a fugitive emission?

Fugitive Emissions

R 336.1106 Definitions; F.

(l) "Fugitive emissions" means those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

Fugitive Dust

R 336.1106 Definitions; F.

(k) "Fugitive dust" means particulate matter which is generated from indoor processes, activities, or operations and which is emitted into the outer air through building openings and general exhaust ventilation, except stacks. The term also means particulate matter which is emitted into the outer air from outdoor processes, activities, or operations due to the forces of the wind or human activity.

What is Particulate Matter (PM)?

Particulate matter is:

- Air pollution that comes in the form of fine dust, smoke, or soot particles.
- It is one of the 6 major pollutants regulated by the US EPA and DEQ-AQD.
- US EPA classifies PM by its particle diameter, measured in microns.

What is Particulate Matter (PM)?

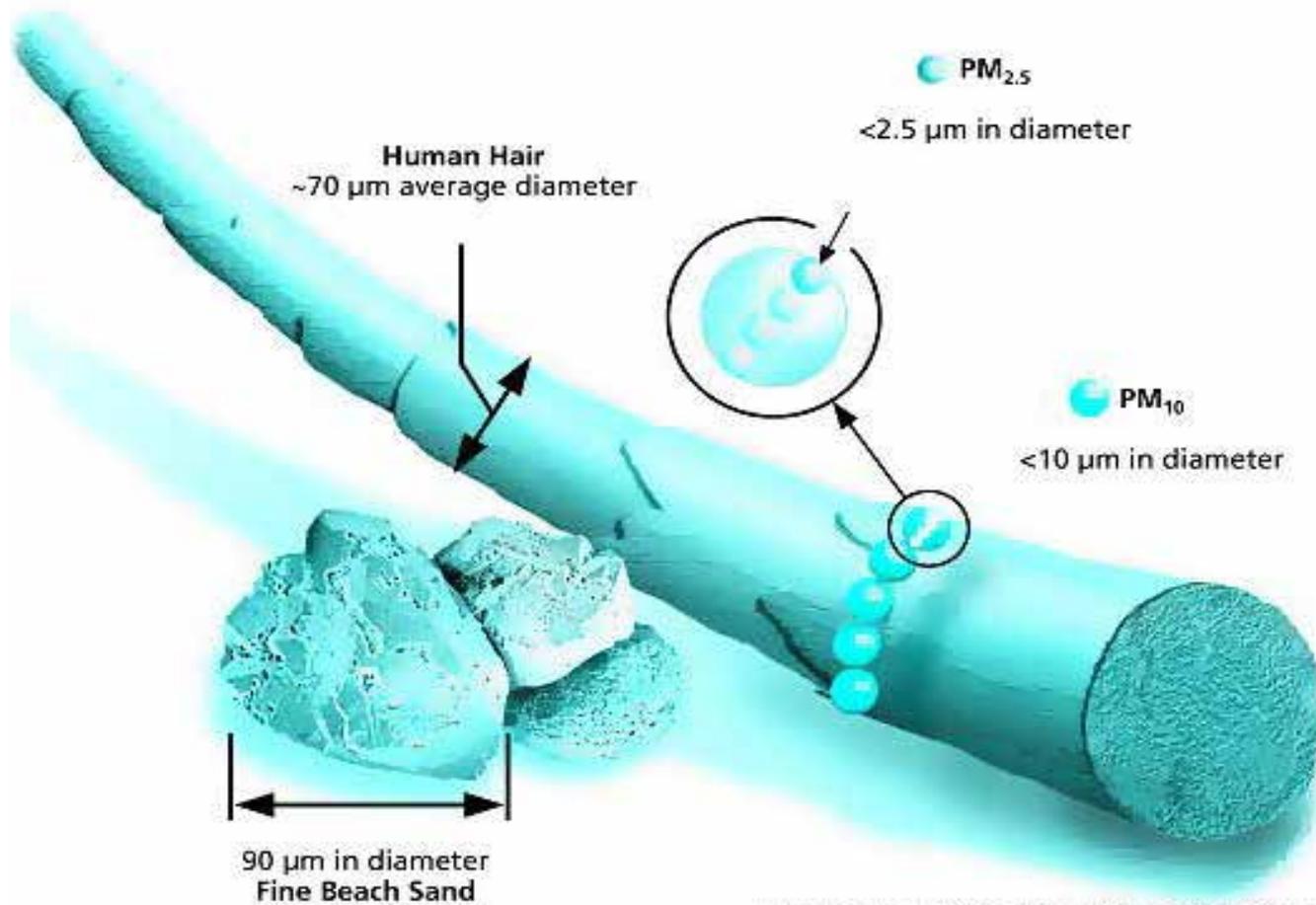


Image courtesy of EPA, Office of Research and Development

Health Effects of Particulate Matter (PM)

Including, but not limited to:

- Respiratory issues
- Heart problems
- Premature death



Point Sources vs Fugitive Emissions

Two types of emissions sources:

- **Point Sources** originate from definite locations such as stacks, vents, or flares.
- **Fugitive Sources** originate from broad areas such as storage piles, dusty lots, vehicular track-out, and material conveying systems.

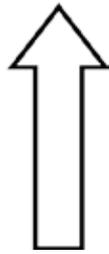
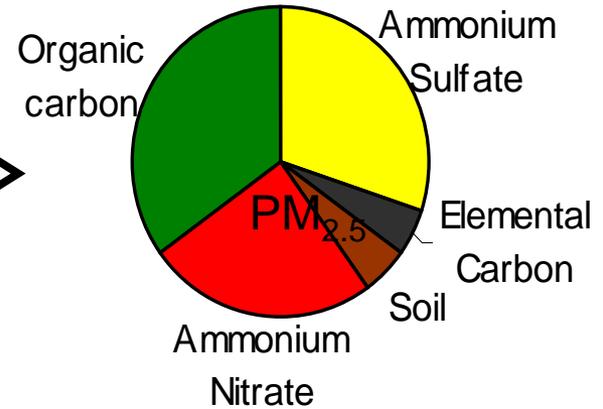
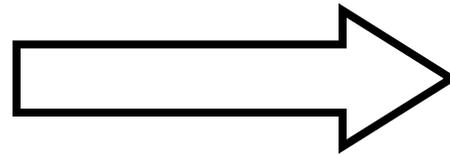
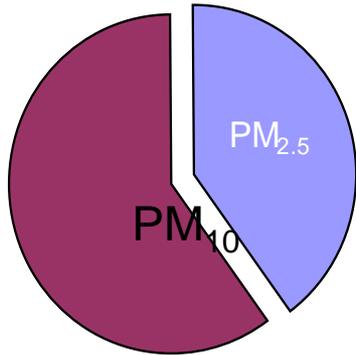
Point Source Emissions



Fugitive Emissions



Sources of Particulate Matter (PM)



Some Sources of Fugitive Dust

Unpaved Roadways



Unpaved, Non-Vegetated Areas



Trackout



Material Storage Piles



Construction-related Activities



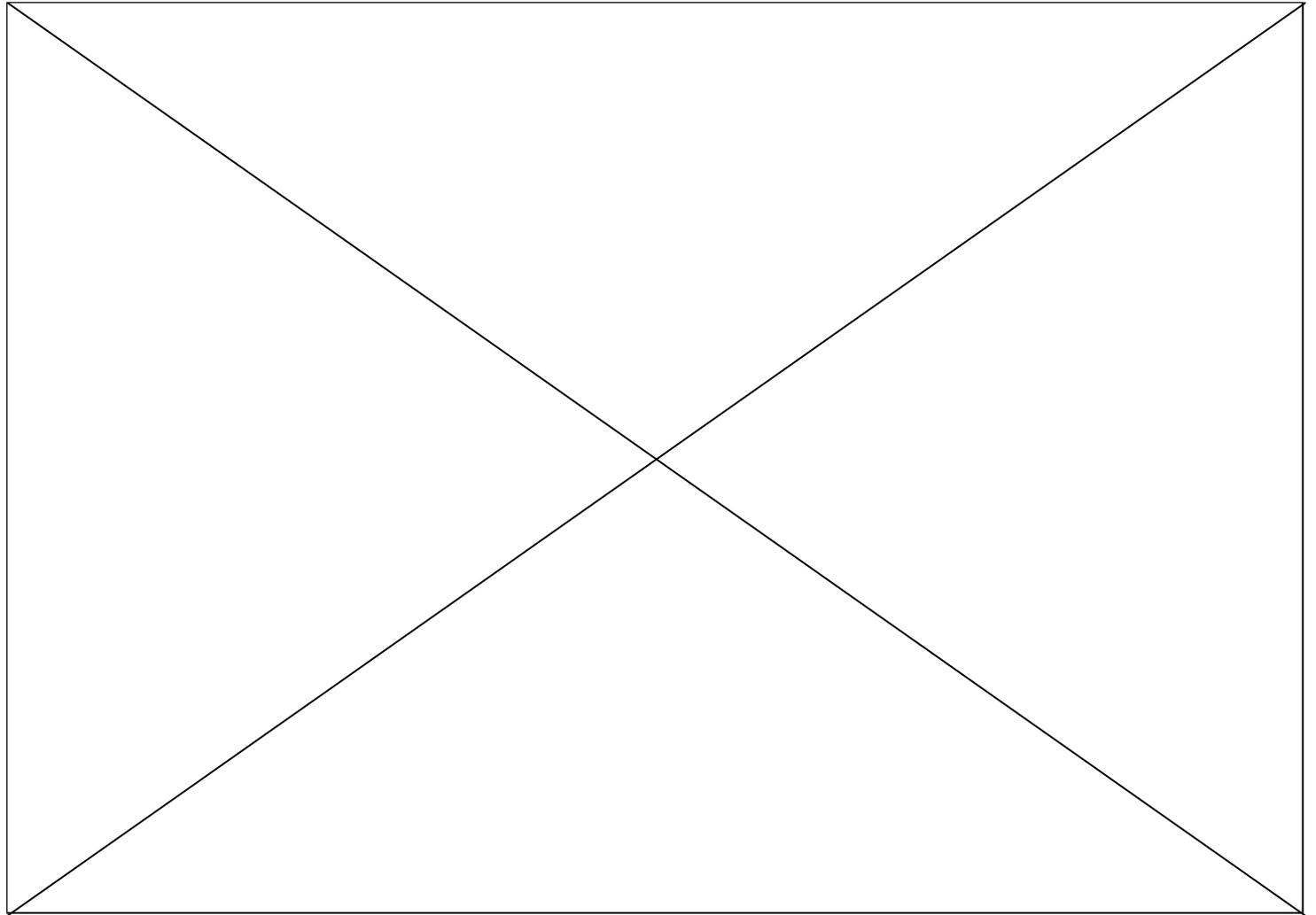
Demolitions



Sappi



Genesee Towers



Fugitive Dust Regulations

AQD

- Part 55, Public Act 451 of 1994
 - » 324.5524 Fugitive Dust Sources or Emissions
- Michigan Air Pollution Control Rules
 - » R 336.1301 Standards for Density of Emissions
 - » R 336.1371 Fugitive Dust Control programs other than areas listed in Table 36
 - » R 336.1372 Fugitive Dust Control Program
 - » R 336.1901 Air Contaminant or Water Vapor, when prohibited

Part 55, Public Act 451 of 1994

324.5524

Fugitive Dust Sources or Emissions

- Required by the Natural Resources and Environmental Protection Act (Act 451)
- Applies to facilities with specific industrial classifications located in specific areas in Michigan.
- Requires dust suppression for certain on-site activities.

Fugitive Dust Sources Subject to 324.5524

Facilities having operations with the following
SIC Codes:

- 10 to 14, mining
- 20 to 39, manufacturing
- 40, railroad transportation
- 42, motor freight and warehousing
- 491, electric services
- 495, sanitary services
- 496, steam supply

Table 36

Muskegon County

T9N, R16W, Sections 5 and 6;

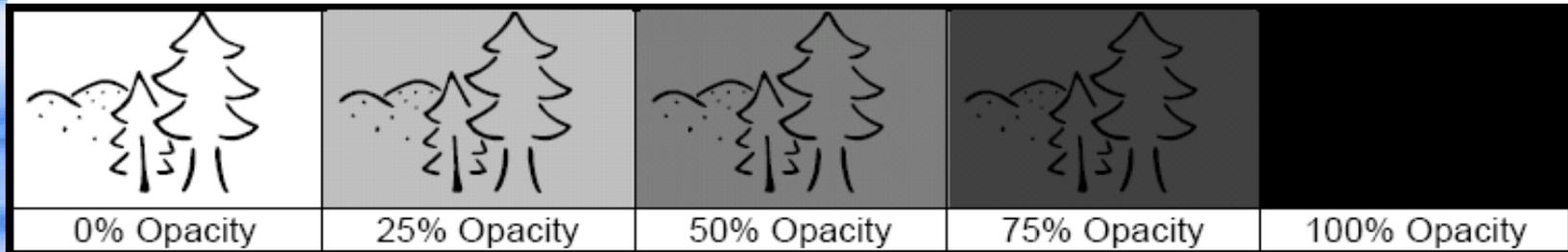
T10N, R16W, Sections 21, 22, and 27
to 34.



What is Opacity?
How do you evaluate it?

R 336.1301 Standards for Density of Emissions

Opacity



The degree in which an emission reduces or obscures the transmission of light from an observers view.

Visible Emissions - 0% opacity



Visible Emissions - 10% opacity



Visible Emissions - 50% opacity



Visible emissions - 100% opacity



Evaluating Visible Emissions

- EPA Method 9
Determines a **quantitative** value of opacity
- EPA Method 22
Provides a **qualitative** value - Is there opacity present? What is the duration?

Comparison of Methods 9 and 22

METHOD 9 (Adopted by EPA 1974)	PARAMETERS	METHOD 22 (Adopted by EPA 1982)
Any sources with an opacity standard	APPLICABILITY	Sources with “no visible emissions std.”, i.e. Fugitive Emissions
Determines a quantitative value of opacity	MEASUREMENT	Qualitative value & duration of a VE, but not the opacity level
Demonstrate the ability to measure plumes every six months	CERTIFICATION	Does not require field certification

Adapted from Eastern Technical Associates, Visible Emissions Training Manual, August 2004



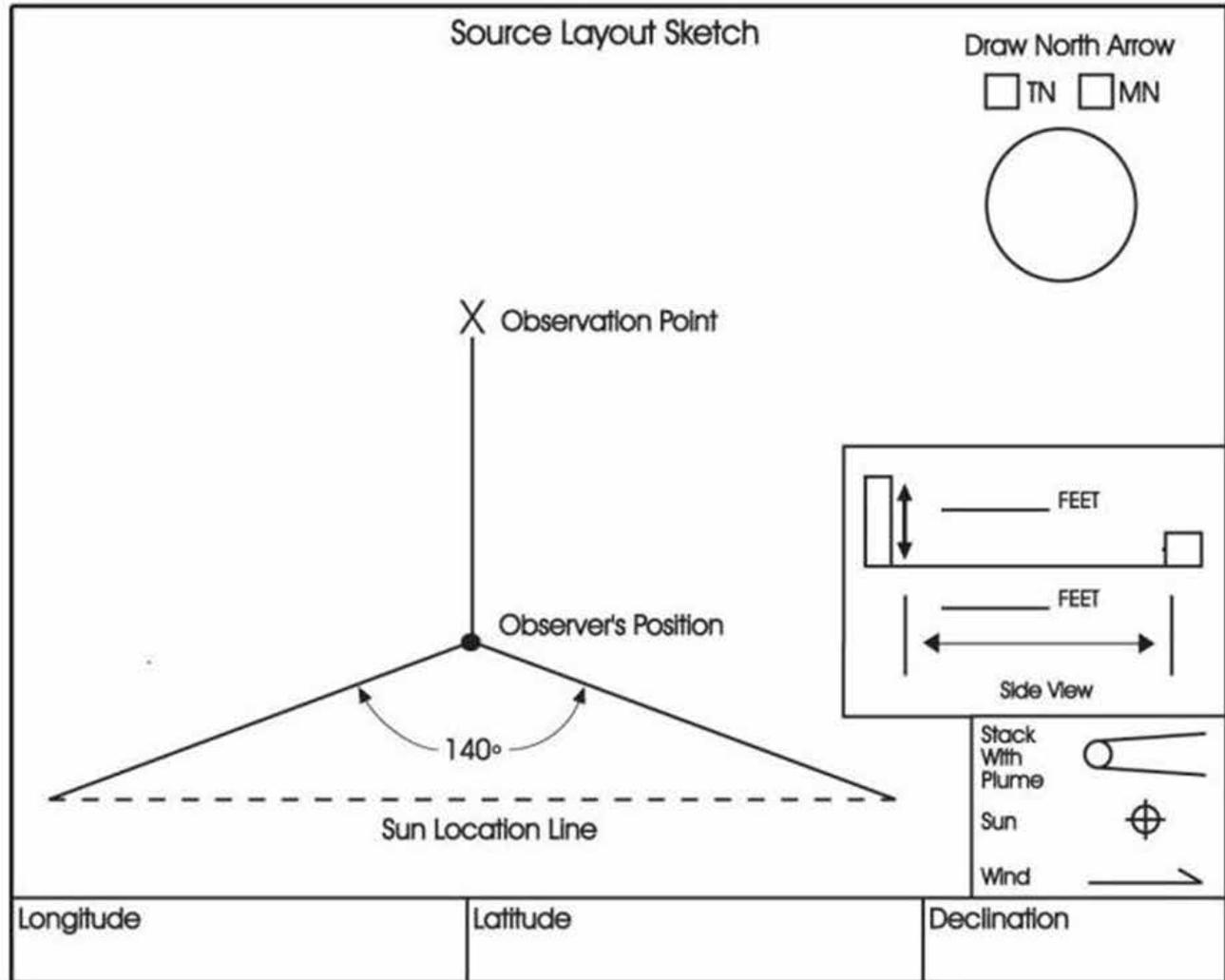


METHOD 9 (Adopted by EPA 1974)	PARAMETERS	METHOD 22 (Adopted by EPA 1982)
No distance is specified, but properly positioned to have a clear view of emissions	DISTANCE FROM SOURCE	Observer must be between 15 ft. to ¼ mile from source
Positioned to minimize the line of sight through the plume	VIEWING ANGLE	You simply observe the emission
Readings occur in daylight hours with the sun at your back	LIGHT SOURCE	The sun doesn't need to be the light source or that you stand with the sun at your back
Observation every 15 sec for a period determined by the standard.	VIEWING TIMES	Continuous viewing with observer rest every 15 to 20 min. Record duration

Adapted from Eastern Technical Associates, Visible Emissions Training Manual, August 2004



EPA Method 9





Fugitive Dust Control Program – When is it required?

R 336.1371 Fugitive Dust Control Programs

(other than areas listed in Table 36)

- Applies to facilities located outside of the Table 36 area.
- Need for control program may be based on ambient air emission measurements or citizen complaints.
- If requested, facility has 6 months to submit a Fugitive Dust Plan to AQD for approval and implementation.

Fugitive Dust Control Programs (FDCP)

- A source regulated by Section 5524 of Act 451 is required to develop and operate under an approved Fugitive Dust Control Program (FDCP).
- A source regulated by Rule 371 must develop and operate under an approved FDCP upon request. This request could be made through the permitting process or after the AQD has identified the source as the cause of complaints.

R336.1371 Fugitive Dust Control Programs Other Than Areas Listed in Table 36

Works together with rule R 336.1372

Type of Fugitive Dust Source	
Loading and unloading of open storage piles	Inactive storage piles
Transporting bulk material	Building ventilation
Outdoor conveying	Roads and lots*
Construction, renovation, and demolition	

Michigan Administrative Rule 901

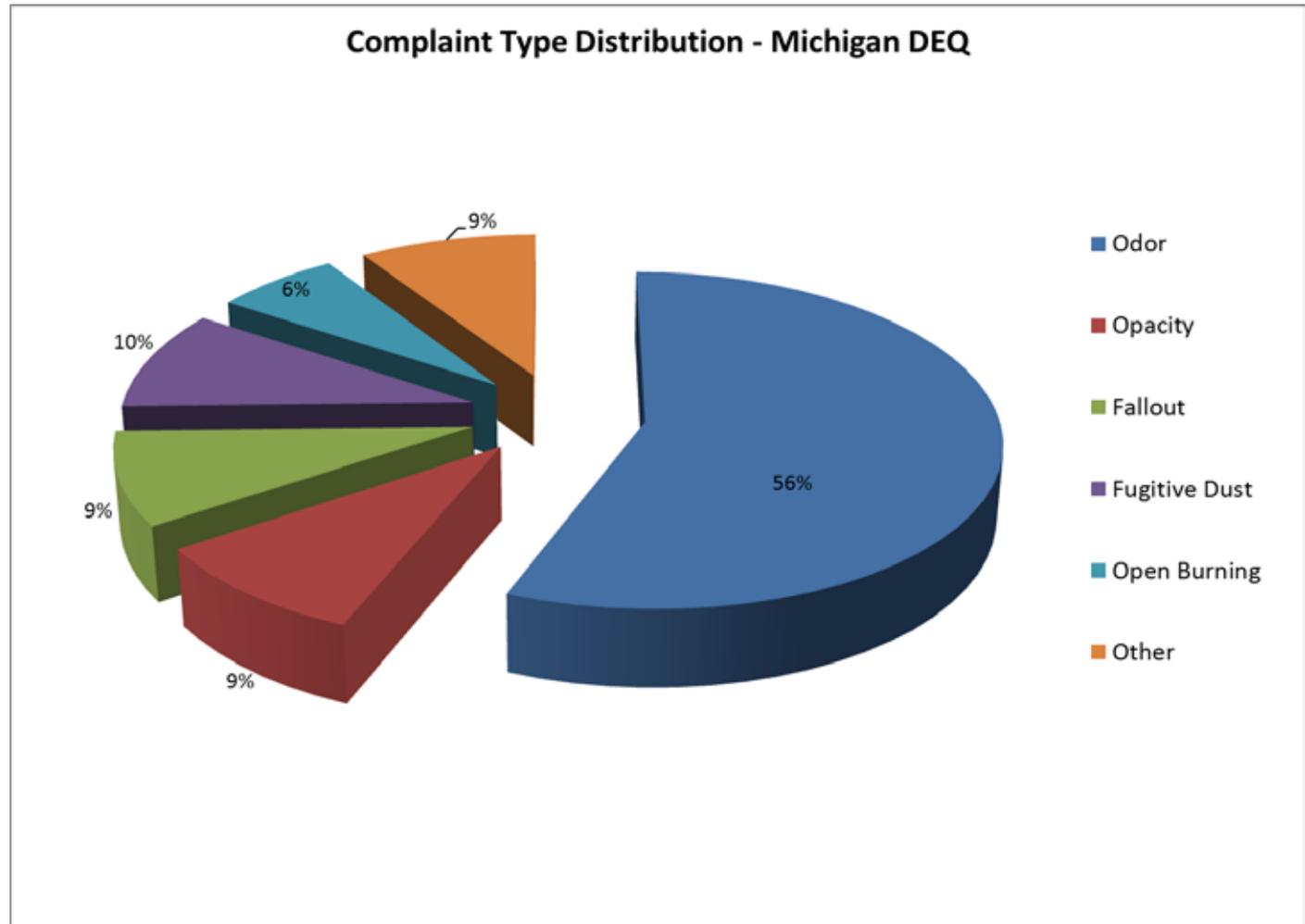
Rule 901. Notwithstanding the provisions of any other department rule, a person shall not cause or permit the emission of an air contaminant or water vapor in quantities that cause, alone or in reaction with other air contaminants, either of the following:

- (a) Injurious effects to human health or safety, animal life, plant life of significant economic value, or property.
- (b) Unreasonable interference with the comfortable enjoyment of life and property.

Complaint Investigations

- Conducted in response to citizen complaints of smoke, odors, fallout, or fugitive dust from the facility.
- Fugitive dust and fallout complaints reported to the AQD/DEQ in the State of Michigan - What is the frequency of occurrence?

Distribution of Complaints by Type – MDEQ-AQD



Fugitive Dust Complaints



Fugitive Dust Complaints



Fugitive Dust Complaints



Reasons to Control Fugitive Dust

- Regulatory requirements
- Conserve materials
- Reduce environmental impacts
- Reduce potential health impacts

...BE A GOOD NEIGHBOR !!!!