Major Sources

Pollutant	Federal NSR		112(g) Major	Major ROP
	Major PSD	Major Offset		
Attainment Pollutants	250 or 100	NA	NA	100
Non-Attainment Pollutants	NA	100	NA	100
Individual HAPs	NA	NA	10	10
Aggregate HAPs	NA	NA	25	25

Insert After Page 1-6

PSD Applicability Matrix

	New	Existing
Minor	**I** **No PSD** But may be subject to minor source permitting	**III** Modifications that by themselves exceed the Major Source threshold
Major	**II** PSD for each pollutant emitted at greater than the Major Source threshold and each additional pollutant emitted at greater than its significant emissions threshold	**IV** PSD for modifications that result in a significant emissions increase and a significant net emissions increase

Insert After Page 2-4

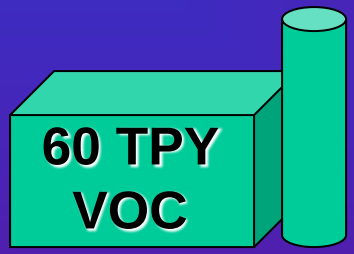
PSD Applicability Matrix

	New	Existing
Minor	Applicability determination is based on the potential emissions from the new equipment	Applicability determination is based on the potential emissions increase resulting from the modification
Major	Applicability determination is based on the potential emissions from the new equipment	Applicability determination is based on the emissions increase above baseline actual emissions

Insert After Page 2-4

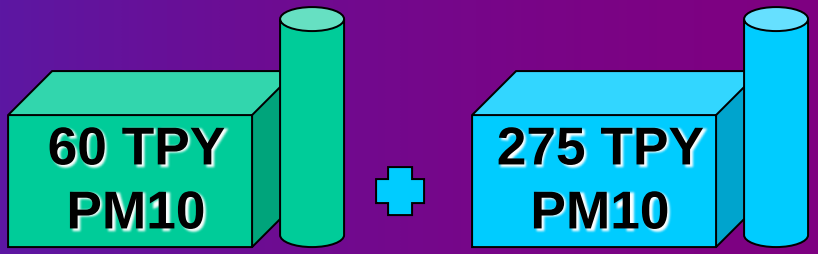
Applicability

New Facility



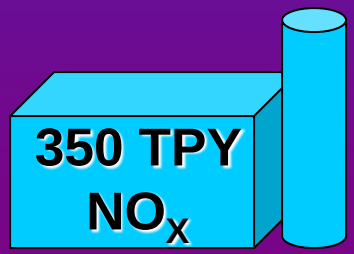
Minor Source

Existing Facility



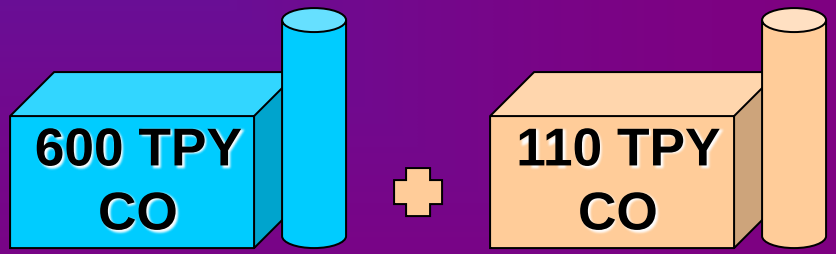
Minor Source + Major Source

New Facility



Major Source

Existing Facility



Major Source + Sign. Source

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PSD Applicability Matrix

Quadrants III and IV – Existing Sources

We Must Decide:

1. If the proposed change is a modification

   And

2. What is the magnitude of the emissions increase from the modification

Insert After Page 2-4

What's a Modification?

A more complete definition

- Any physical change in;
- Or change in the method of operation of;
- An existing major (Q4) source that;
- Would result in a significant emissions increase; and
- A significant net emissions increase.

Excluding:

- Routine maintenance, repair, and replacement;
- Use of alternative fuels (under certain circumstances);
- Changes of ownership;
- The addition or replacement of a pollution control project;
- Increases in operating hours or production rate, unless either are prohibited by permit condition

Insert After Page 2-4

Quadrants I - III

Potential Emissions Increases

Potential emissions BEFORE the modification.

Potential emissions AFTER the modification.

Q1 Sources

249 TPY After
- 0 TPY Before
= 249 TPY Increase

No PSD

Q2 Sources

275 TPY After
- 0 TPY Before
= 275 TPY Increase

PSD

Q3 Sources

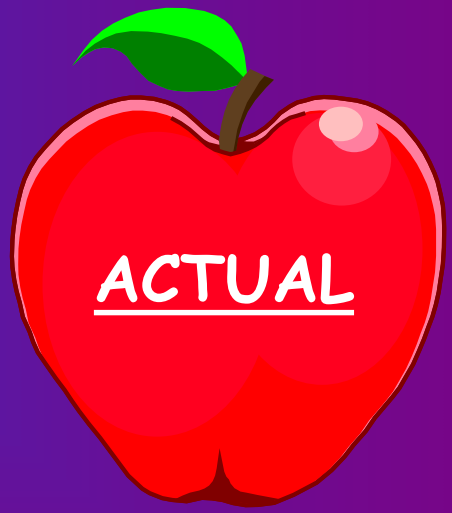
498 TPY After
- 249 TPY Before
= 249 TPY Increase

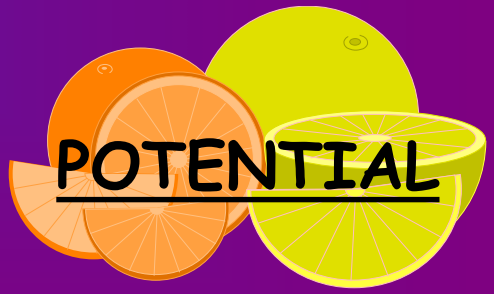
No PSD

Insert After Page 2-4

Actual to Potential Test

The post-change POTENTIAL emissions are compared with the Baseline ACTUAL Emissions





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Example

Company A submits an application to modify one of its boilers. Company A is an existing major stationary source (Q4) of NO_X. The modification will increase potential NO_X emissions from 75 lb/hr to 80 lb/hr. The boilers have consistently operated 7200 hr/yr, but are permitted to operate 8760 hr/yr (allowed 329 TPY). Using the Actual to Projected Actual Test, is this change subject to PSD?

Baseline: 75 lb/hr x 7200 hr/yr x 1 ton/2000 lb = 270 TPY

Potential: 80 lb/hr x 8760 hr/yr x 1 ton/2000 lb = 350 TPY

350 - 270 = 80 TPY > 40 TPY Major

Projected: 80 lb/hr x 7200 hr/yr x 1 ton/2000 lb = 288 TPY

288 - 270 = 18 TPY < 40 TPY Minor

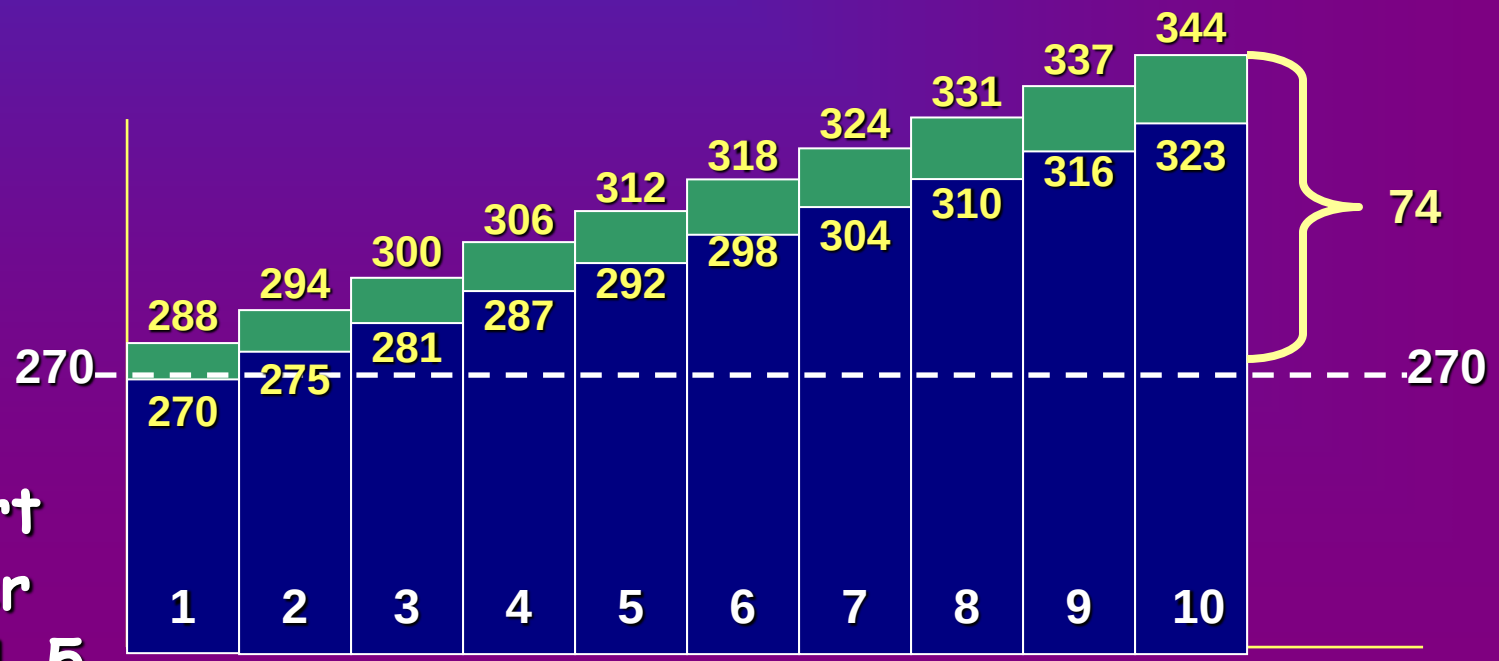
Insert After Page 4-5

Example

Instead of remaining constant, boiler utilization will continue its historical trend of 2% growth per year from 7200 hr/yr.

What emissions could the boiler accommodate prior to the change?
75 lb/hr x Projected Utilization (hr/yr)

Are these emissions independent of the change to 80 lb/hr?
Would they have happened anyway?

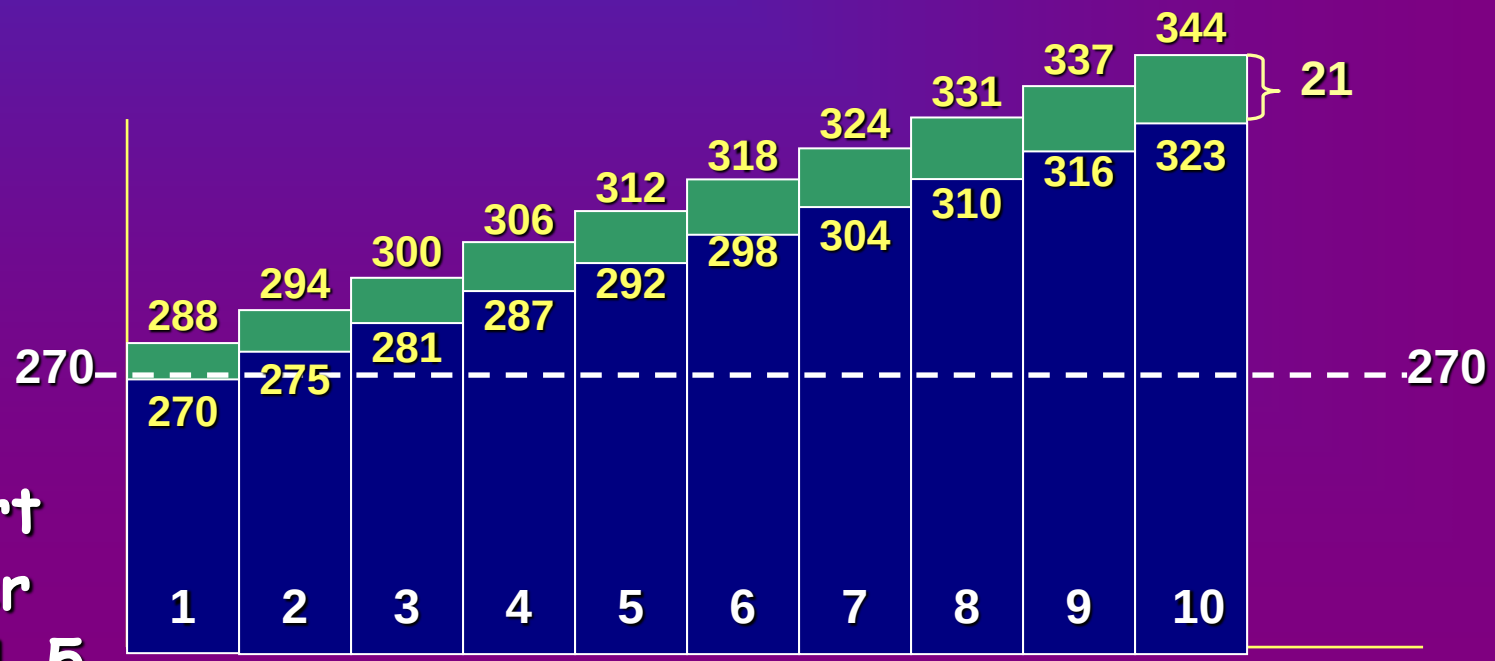


Insert After Page 4-5

Question

Since the boiler was already permitted at 329 TPY, why isn't the level of excluded emissions equal to 329 TPY?

Because, at the level of projected business activity, the boiler could only have accommodated 323 TPY of emissions, otherwise it would have violated its permit.



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Netting

For modifications at existing major sources (Q4), there are two parts to PSD applicability…

…determining if a significant emissions increase will occur

…determining if a significant net emissions increase will occur

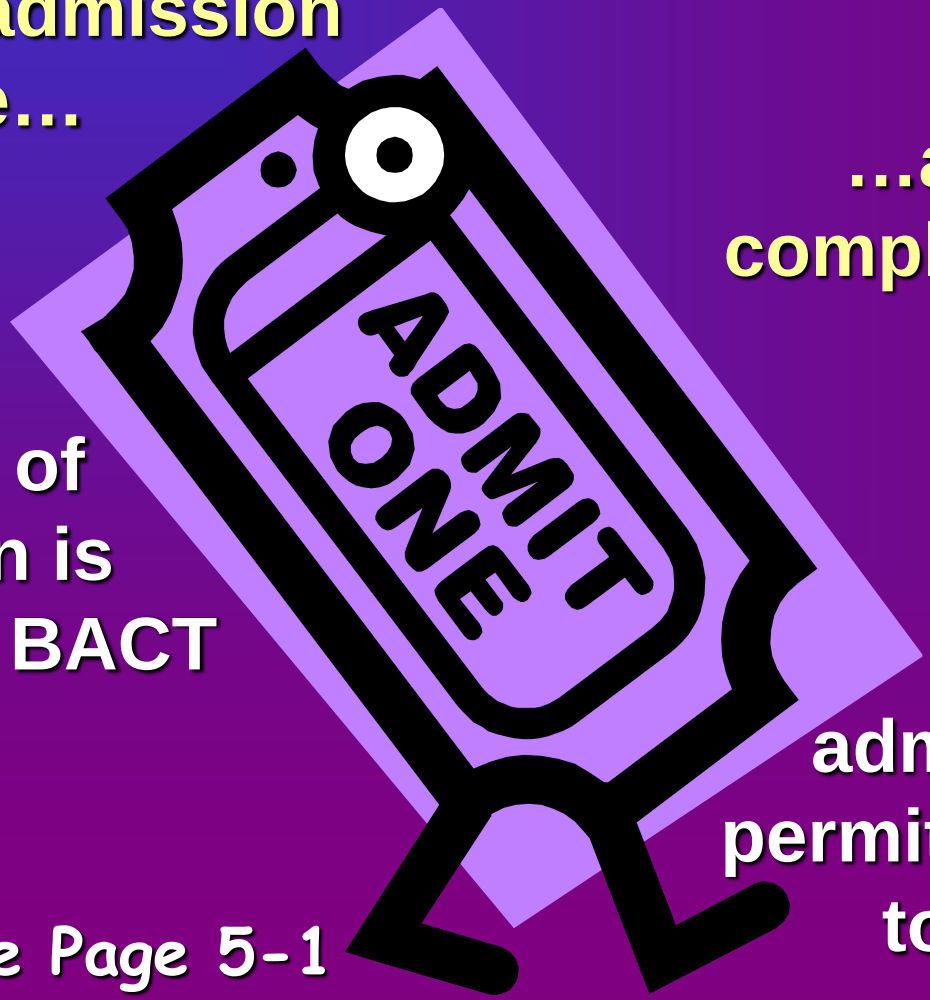
Emissions change from the project

Emissions change from the facility

Insert After Page 3-6

In A Nutshell

Each Emission Unit pays for admission only once…



…as long as it complies with the terms of its admission

The price of admission is installing BACT controls

The terms of admission are the permit limits needed to ensure BACT

Insert Before Page 5-1

What Are Qualifying Controls?

- Add-on control devices
- Pollution prevention activities
- Work practice standards

A monetary investment in the controls is necessary!

The investment must qualify as a capital expense under the IRS filing guidelines

Insert Before Page 5-1

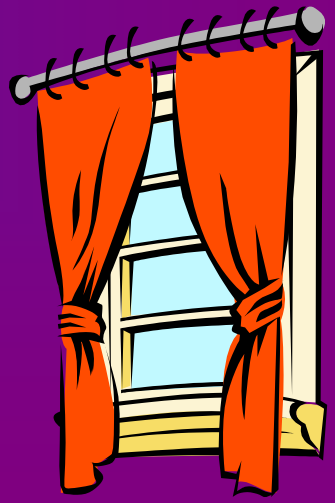
How Do I Get In On This?

Use the Front Door…

New EUs that install qualifying BACT controls through PSD automatically get in

…Use the Back Door…

EUs that installed qualifying BACT controls through PSD in past 10 years automatically get in



… Or Climb in Through the Window

EUs with comparable, or "substantially as effective" control technology may get in (with a demonstration)

Insert After Page 5-2

What Should I Expect?

Permit limits specifying the start and end dates for the CU designation

Emission limits based on, or equal to, BACT

Permit limits on other terms such as operating parameters, on which the BACT and CU determinations were based

Monitoring, recordkeeping and reporting requirements adequate to allow on-going demonstration of compliance

Insert After Page 5-6

What to Expect

The limit will be a rolling 12-month total – effective for 10 years

Emissions from all sources of the PAL pollutant must be monitored, or a default value used

Records must be kept for life of the PAL plus 5 years

Annual compliance certification required

Semi-annual deviation reports required

Insert After Page 6-4

What to Expect

The new PTI containing the PAL conditions must go through the public noticing requirements

PAL conditions will be rolled into the ROP at its next opportunity

Insert After Page 6-4

Can the PAL Level Be Changed?

At Renewal

Appropriate level based on:

Air Quality Needs

Advances in Control Technology

Anticipated Economic Growth in the Area

To Reward or Encourage Voluntary Emission Reductions, etc…

Decreases

To correct typos or other errors

To accommodate the generation of ERCs or Offsets

To reflect the impact of new State or federal regulations

To maintain air quality

Increases

Ten steps to determine if an increase is allowable.

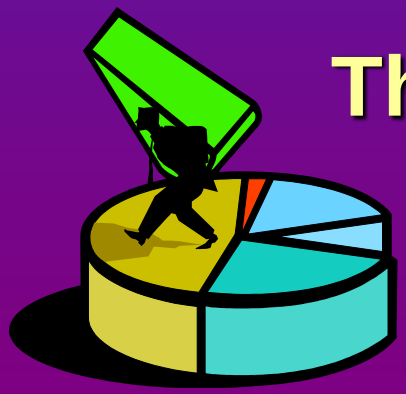
Turn to

Page 6-3

Insert After Page 6-3

How Do I Get Out of the PAL?

Divide the PAL tonnage among all the emission units at the facility



These allocations will become the new permit limits for each emission unit

Insert After Page 6-4

Am I in?
A PSD Applicability Summary…

	Method	Records	Calcs	Controls	New EUs
Emission Tests	A2P	No	Yes	No	Yes
	A2A	Yes	Yes	No	No
Alternate Tests	Clean Unit	No	No	Yes	No
	PAL	Yes	No	No	Yes
	PCP	No	Maybe	Yes	No

Insert After Page 7-7

Step 2: Eliminate Technically Infeasible Options

UNUSUAL CHARACTERISTICS

Catalyst Blinding Agents

Halogenated VOCs and Oxidizers

Sticky PM and Baghouses

Cool Exhaust Temperatures and SCR

Insert After Page 8-2

Step 2: Eliminate Technically Infeasible Options

UNUSUAL CHARACTERISTICS

Nobody Else In Our Industry Has Used It

There's Not Enough Room For The Ductwork

The Roof Won't Support It

Consumes a Limited Natural Resource (Natural Gas)

Will Require Its Own Electrical Substation

Our Building Contains an Explosive Atmosphere

REJECTED

Insert After Page 8-2

Step 4: Evaluations

Energy Impact Analysis

Only Unusual Energy Impacts Should Be Considered

These usually end up in the $ Economic Analysis $

Insert After Page 8-4

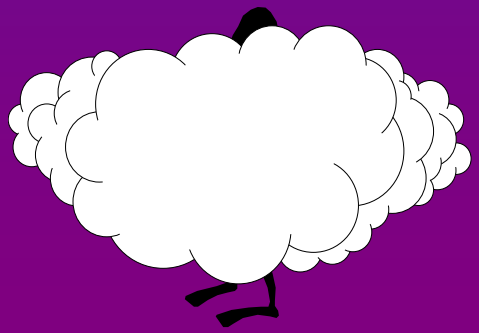
Step 4: Evaluations

Environmental Impact Analysis

This is not NAAQS and Increments

Need to show unusual/unreasonable impacts compared to other facilities where this control option has been used

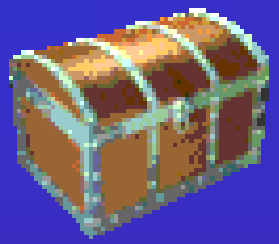
Visibility Impacts



Solid/Hazardous Waste Generation

Water Discharges

Insert After Page 8-4



Step 4: Evaluations
Economic Impact Analysis

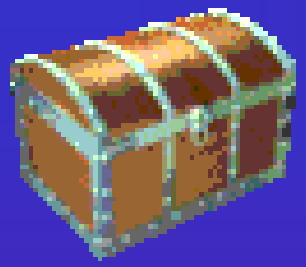
How can control costs be determined so that they can be compared among different facilities and for different control options?

Dollars per Ton of Pollutant Controlled

Allows comparisons among different types of companies

Allows comparisons among companies of different sizes

Insert After Page 8-4

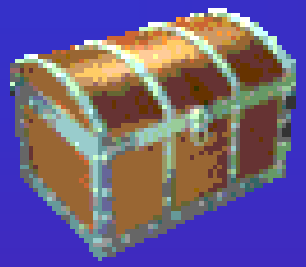


Step 4: Evaluations
Economic Impact Analysis

Dollars per Ton of Pollutant Controlled

1. Calculate the Annualized Cost for the control option
2. Calculate the Annual Emissions, in tons that will be reduced by the control option

Insert After Page 8-5



Step 4: Evaluations
Economic Impact Analysis

Annualized Cost

- Total Capital Investment annualized over 10 years at 7% interest
- Annual Labor Costs (oper/maint/supv)
- Annual Energy Costs (fuel/electrical)
- Annual Overhead Costs (taxes/insurance)

Insert After Page 8-5

Step 4: Evaluations

Economic Impact Analysis

Example

Control Option No. 1	Control Option No. 2
Reduces 142 TPY (EU A & B)	Reduces 130 TPY (EU A only)
TCI = $4,500,000	TCI = $3,100,000
10 years @ 7% = $635,400/yr	10 years @ 7% = $437,720/yr
Labor = $4000/yr	Labor = $4500/yr
Energy/Util = $123,000	Energy/Util = $151,000
Overhead = $75,400	Overhead = $56,780
Control Cost = $837,800/yr	Control Cost = $650,000/yr
$5900/ton for 142 tons	$5000/ton for 130 tons

Assume Recent BACT determinations = $5000 - $6000/ton

Insert After Page 8-5

Step 4: Evaluations

Economic Impact Analysis

Example

Control Option No. 1

Control Cost = $837,800/yr
$5900/ton for 142 tons

Control Option No. 2

Control Cost = $650,000/yr
$5000/ton for 130 tons

Incremental Cost

$837,800 - $650,000 = $187,800

142 tons – 130 tons = 12 tons

$187,800 / 12 tons = $15,650/ton

Assume Recent BACT determinations = $5000 - $6000/ton

Insert After Page 8-5

Modeling

WHO? - All PSD Applicants

WHAT? - All New Emissions

WHY? - To Show They Don't Cause or Contribute to A Violation of Any NAAQS or PSD Increment

Insert Before Page 9-17

Modeling for PSD Increments

Only for SO_2, NO_X and PM10

Triggering Dates (See MDEQ Website)

Increment Consuming Sources

Increment Expanding Sources

80% Consumption Allowed

Insert Before Page 9-17

Modeling for NAAQS

- Emissions from All Sources having a significant impact
- Measured Background
- Source Inventories and Background Concentrations Available from MDEQ

Insert Before Page 9-17

What Affects Modeling?

Stack Height

Building Height

Terrain Height

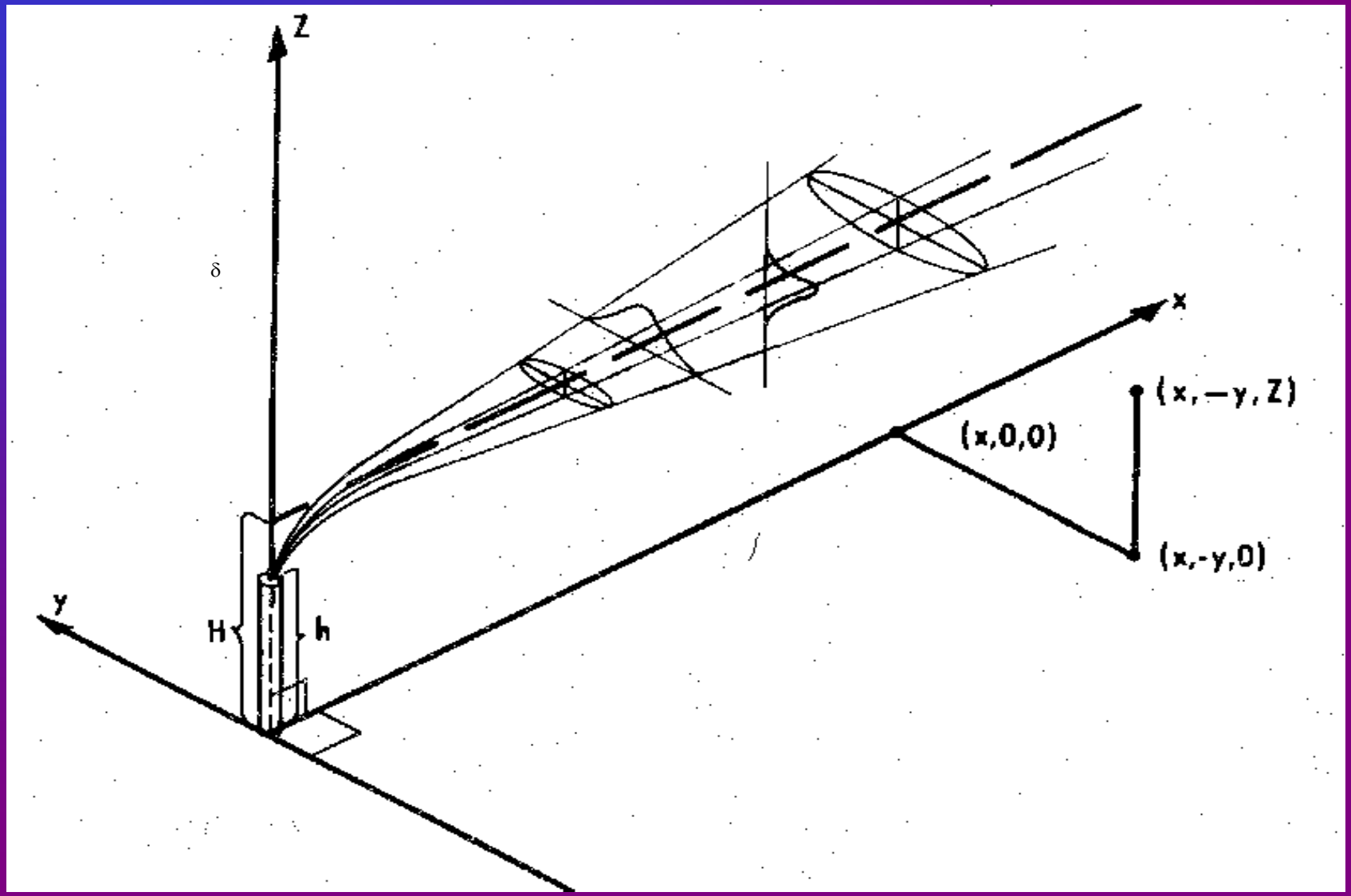
Exhaust Flow Rate (CFM)

Exhaust Temperature

Stack Exit Diameter

Insert Before Page 9-1

Another View of Dispersion



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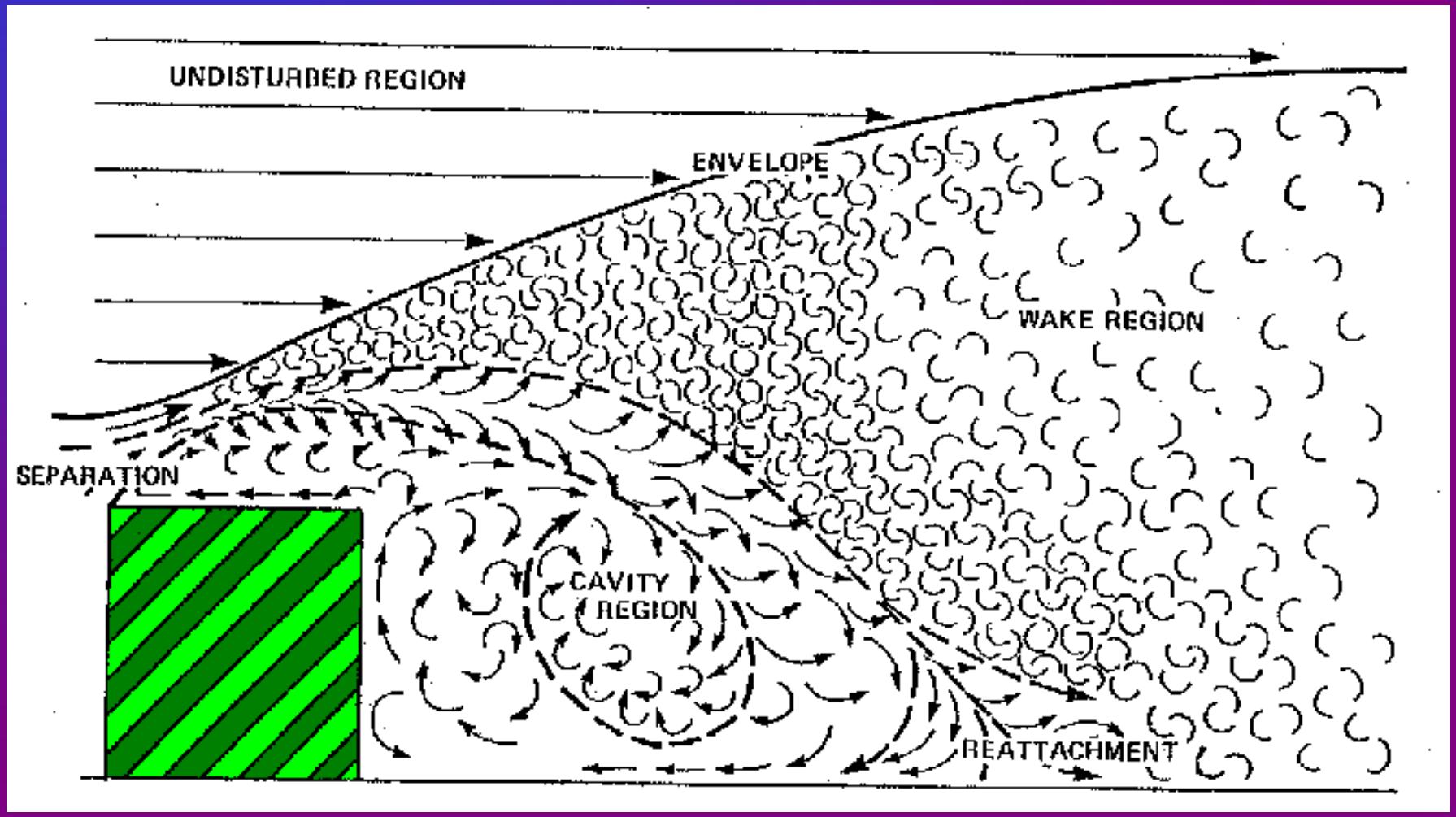
Building Downwash



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