

An Overview of Odour Regulation in the United States

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St. Croix Sensory, Inc.

Odours through the years...

- 1960's - Rendering
- 1970's - Pulp & Paper
- 1980's - Waste Water



Odours through the years...

- 1990's - Municipal Solid Waste
- 2000's - Animal Agriculture & Ethanol
- 2010's - Compost & Kitchen Waste



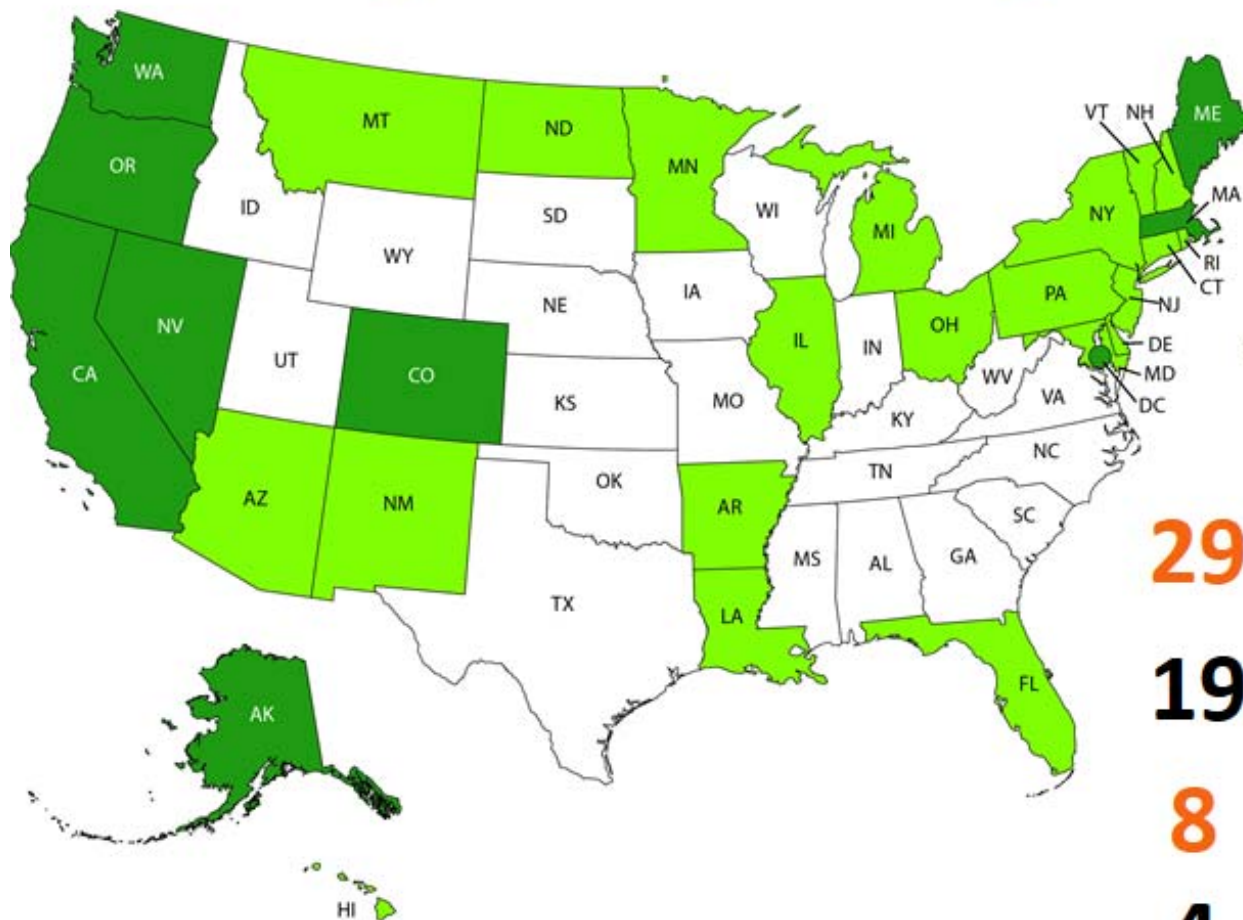
Odours through the years...

- Late 2010's - Legalized Marijuana



Marijuana Legalization by State

■ States with Recreational Marijuana Laws
 ■ States with Medical Marijuana Laws



Key Statistics

59.3%

of the U.S. population now lives in a state where marijuana has been legalized

29 states plus Washington DC have medical marijuana laws ...

19 plus Washington DC have operating dispensaries

8 states plus Washington DC have recreational marijuana laws ...

4 with operating retail stores

U.S. - EPA



- Does not regulate odour directly
- Regulates chemical constituents of odour
- Does not preclude states from regulating odour directly



In 1970

the National Air Pollution Control Administration
of the US Public Health Service
commissioned a study:

“National Survey of the Odor Problem”

Conducted by,

Copley International Corporation

1970 Study Methodology

- *Seven* metropolitan areas studied
- Public attitude *surveys* conducted
- *Scentometers* used to measure odour
- *Odour judgment panels* also used

1970 Study Findings

- Most agencies used unaided nose, number of complaints, and “common sense” to determine *nuisance*.
- Most agencies used *persuasion* rather than enforcement action.
- No agency had a record of substantial penalties levied against violators

1970 Public Survey Findings

- 50% believed odour was a serious problem
- Responsible authority not clearly known
- Most were resigned to tolerate the odour
- Most believed selling home was affected

1970 Technical Program Results

- *Scantometer* found to be a utilitarian and effective tool
- *Odour judgment panel* (or investigator) provides definitive description of the extent of the odour emission

Field Olfactometry (Scentometer) History

U.S. Public Health Service
developed the first field olfactometer

1958 Grant A-58-541

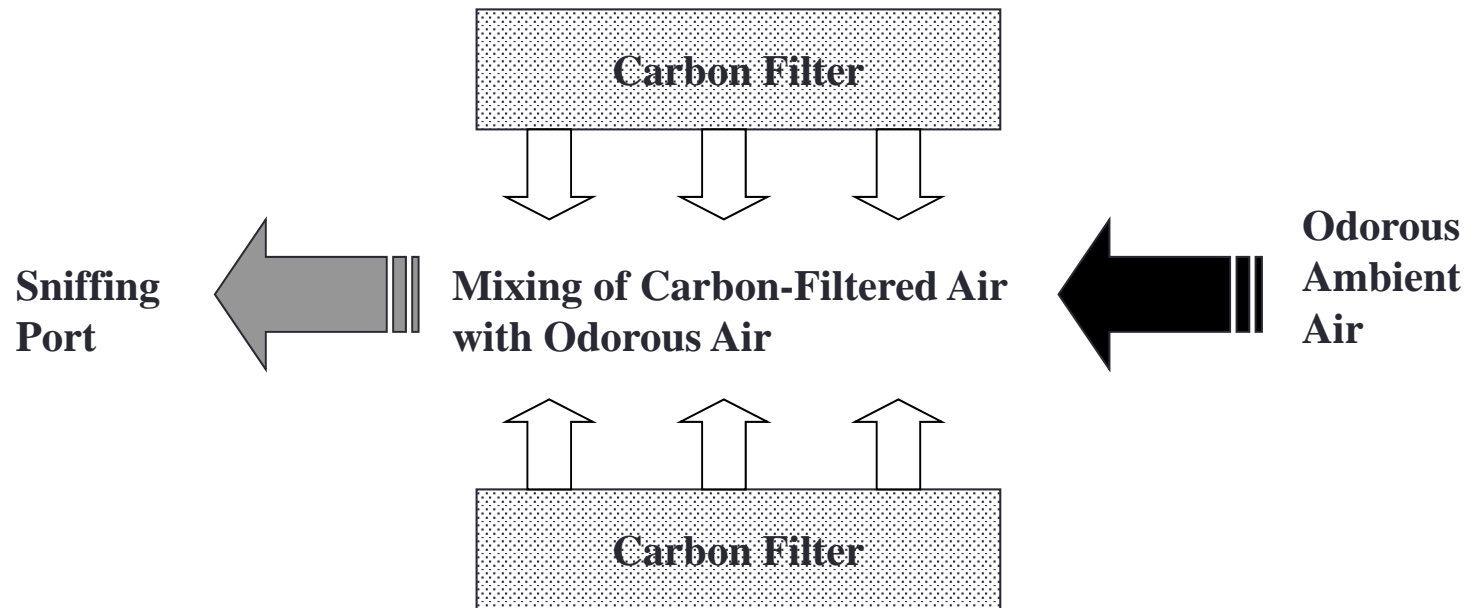
....Barnebey-Cheney “Scentometer”

Based on “Dilution-to-Threshold” ... “D/T”

Measurement by: dynamic dilution of odour

7 parts odour free air divided by 1 part odour = 7

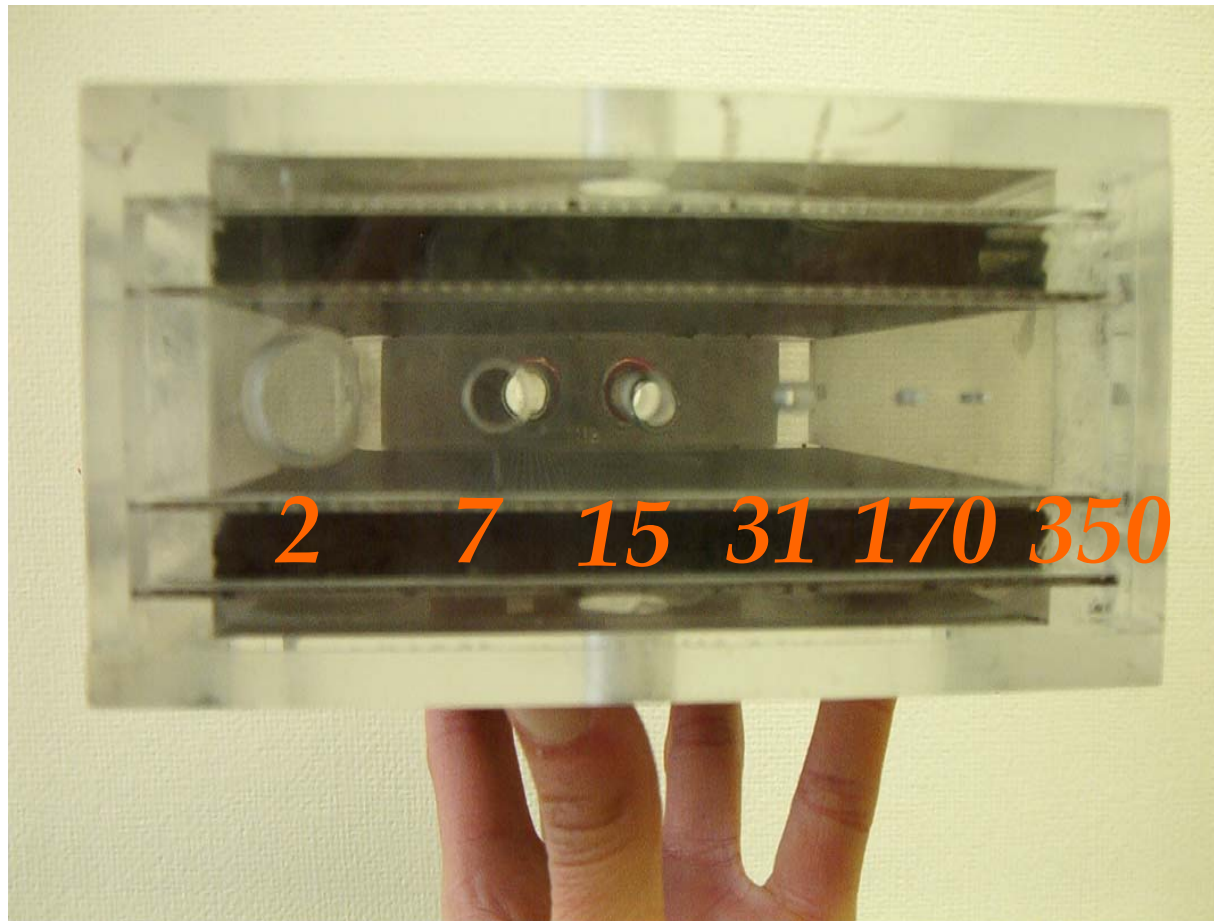
Field Olfactometer



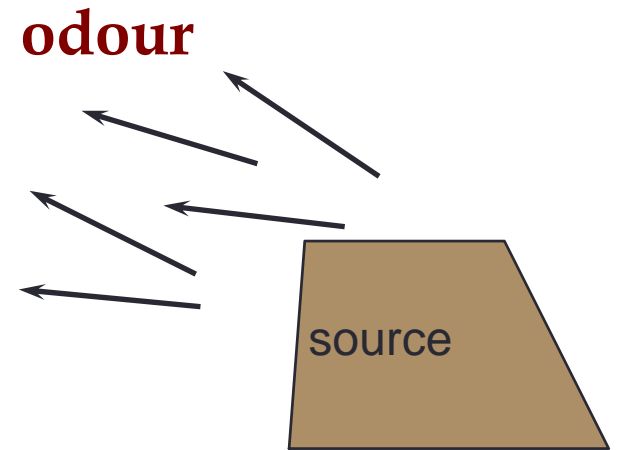
Barnebey-Cheney Scintometer



Barnebey-Cheney Scentometer



Odour Judgment Panel



Odour Judgment Panel





In 1971 the US Environmental Protection Agency
commissioned a **second** study:

“Social & Economic Impacts of Odors”

Conducted by,
Copley International Corporation

1971 Study Objectives (one metropolitan area)

- In depth public attitude surveys-**quarterly**
- Concurrent field studies
- Analysis of property values
- Development of investigative procedures

1971 Study Findings

- Public attitudes:
 - ✓ Odours a serious problem (*mostly summer*)
 - ✓ Social & economic effects *not definable*
- Technical studies:
 - ✓ Scentometer a "*sensitive device*"
 - ✓ Odour judgment panel – "*logistic challenge*"
- Property value analysis: *indeterminate*
- Investigative procedures: *more study*



In 1972 the US Environmental Protection Agency
commissioned a **third** study:

**“Development and Evaluation of a
Model Odor Control Ordinance”**

Conducted by,
Copley International Corporation

1972 EPA Study Objectives

- Prepare a **Model Odour Ordinance**
- Evaluate investigative procedures and develop training programs (4 agencies)
- Submit procedures and model ordinance to the US - EPA

Agencies Selected for 1972 Study

- City of Houston, Texas
- Hillsborough County, Florida
- Columbia-Willamette, Oregon
- State of Maryland



1972 EPA Study Findings

- Public surveys not applicable to sparsely populated communities
- Odour judgment panels too *cumbersome* for routine application
- Difficulty in getting residents to appear in court as accusers of public nuisance

1972 EPA Study Conclusions

- The investigative procedures applicable to **80%** of all possible odour problems
- Odour judgment panels best left to special circumstances; i.e. *support of court action*
- Model odour ordinance ***can not*** be drafted that is compatible with the legalistic approach preferred by every jurisdiction

1972 EPA Study Recommendations

- Public nuisance law can be effective
- Trust surveillance **not** complaints
- Odour statute must establish a violation
 - One or more **trained inspectors**
 - Use of a **dilution device** (Scentometer)
 - **Stack samples** evaluated for odour strength

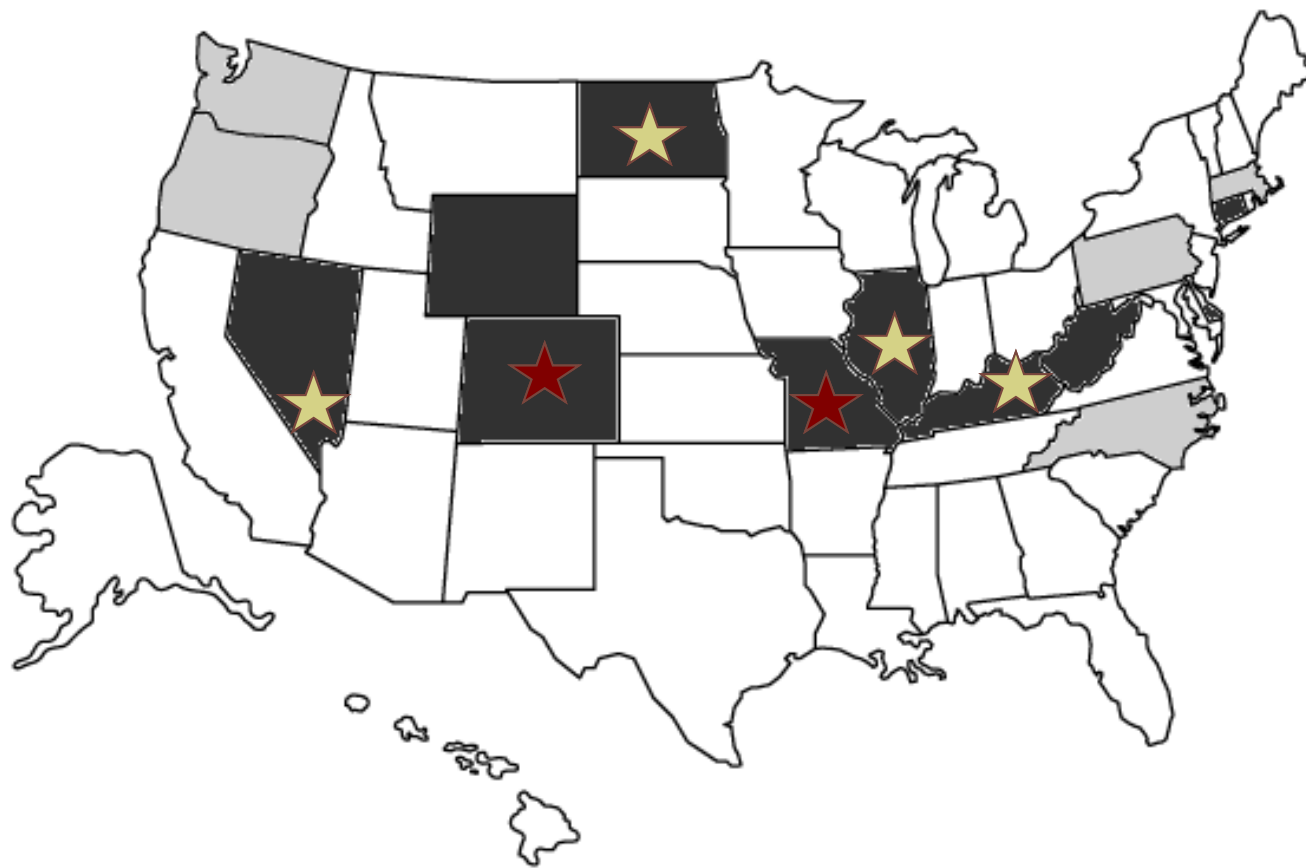
Elements of an Odour Ordinance Identified:

- The prohibition of odour nuisance
- Odour nuisance determination (choices)
- Right to inspect premises; right of entry
- Enforcement provision (penalty)
- Existing remedies allowed

Terminology:

“objectionable to individuals of ordinary sensibility”

Ten States Regulate Odour using the Dilution-to-Threshold (D/T) Method



- Colorado
- Connecticut
- Delaware
- Illinois
- Kentucky
- Missouri
- Nevada
- North Dakota
- West Virginia
- Wyoming

State of Colorado

5CCR 1001-4 AQCC Regulation No.

2

- ✓ 7 D/T residential or commercial
- ✓ 15 D/T “other” areas
- ✓ Never > 127 D/T
- ✓ Swine facility: never >7 D/T @ boundary
- ✓ Swine facility: never >2 D/T off-site
- ✓ **Two or more exceeding measurements within an hour & more than 15-min apart**

“...areas predominantly for residential or commercial purposes, it is a violation if odors are detected after the odorous air has been diluted with seven (7) or more volumes of odor free air.”



City of Denver
Marijuana Grow House



SHOULD YOU FEAR THE NASAL RANGER?

By Sirius J April 09, 2015



HIGH TIMES recently got its hands on the infamous Nasal Ranger, the device that can tell you how strong a smell is. Check out what it does, how it works, how it affects the cannabis community, and take a look at our own experiment.

MOST POPULAR



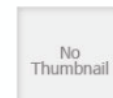
Drug Testing 101
By HIGH TIMES



Beginners: How to Grow Just One Pot Plant in Your Home
By Nico Escondido



10 Little-Known Uses for CBD
By Tyler Terps



How to Get a Medical Marijuana Card for 2017
By HT Sponsor

Municipality Example

...if any of the following conditions are present:

- ✓ ambient air after it is diluted with four equally sized samples of odour-free air, for two samples or observations not less than fifteen minutes apart within a one hour period;
- ✓ ambient air intensity greater than 75 ppm n-butanol;
- ✓ a written citizen complaint...verified



City of Des Moines

Citizen Odor Board

- ✓ 10 members appointed by city council
- ✓ Meet monthly or quarterly as needed
- ✓ Review nuisance odour complaints
- ✓ Review violations of odour ordinance
- ✓ **Appeals Board**



City of Des Moines

Citizen Odor Board

- ✓ Odor Alert = **10 calls in 24-hours**
- ✓ Inspector responds
- ✓ Inspector may serve notice of violation
- ✓ 3 in 90-days = **significant odor generator**
- ✓ Must submit a plan: **testing, modeling, mitigation...**
- ✓ May **appeal** to the Odor Board; then City Council

ODOR COMPLAINT INVESTIGATION PROCEDURES

FIDO CHART

ODORS CHARACTERIZED AS **HIGHLY OFFENSIVE**

		FREQUENCY				
		Single Occurrence	Quarterly	Monthly	Weekly	Daily
D U R A T I O N	1 minute	NA	NA	VS	S	M
	10 minutes	NA	VS	S	M	L
	1 hour	VS	S	M	L	VL
	4 hours	S	M	L	VL	VL
	12 hours+	M	L	VL	VL	VL

ODORS CHARACTERIZED AS **OFFENSIVE**

		FREQUENCY				
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D U R A T I O N	1 minute	NA	NA	NA	VS	S
	10 minutes	NA	NA	VS	S	M
	1 hour	NA	VS	S	M	L
	4 hours	VS	S	M	L	VL
	12 hours+	S	M	L	VL	VL

ODORS CHARACTERIZED AS **UNPLEASANT**

		FREQUENCY				
		Single Occurrence	Quarterly	Monthly	Weekly	Daily
D U R A T I O N	1 minute	NA	NA	NA	NA	VS
	10 minutes	NA	NA	NA	VS	S
	1 hour	NA	NA	VS	S	M
	4 hours	NA	VS	S	M	L
	12 hours+	VS	S	M	L	VL

ODORS CHARACTERIZED AS **NOT UNPLEASANT**

		FREQUENCY				
		Single Occurrence	Quarterly	Monthly	Weekly	Daily
D U R A T I O N	1 minute	NA	NA	NA	NA	NA
	10 minutes	NA	NA	NA	NA	NA
	1 hour	NA	NA	NA	NA	VS
	4 hours	NA	NA	NA	VS	S
	12 hours+	NA	NA	VS	S	M

INTENSITY LEGEND
VS
Very Strong
S
Strong
M
Moderate
L
Light
VL
Very Light



Highly Offensive

- * Blood drying operations
- * Sewage treatment primary sludge
- * Putrefying animals/fish
- * Hide processing
- * Rancid grease
- * H₂S (Landfill gas, leachate, paper mill black liquor, etc.)
- * Mercaptans (natural gas odorant)

Offensive

- * Landfill garbage/waste
- * Cattle lagoon cleanout
- * Confined hog/poultry operations under best management practices
- * Decaying silage/composting
- * Unprocessed rendering plant material and wastewater
- * Typical grease trap odor
- * Waste burning (rubber, plastic, tires, other non-wood materials)
- * Failing or improperly operated septic systems
- * Organic products like auto-body paint & styrene (fiber-glass, cultured marble mfg)¹

Unpleasant

- * Well digested or chemically-treated sludge
- * Cattle operation under best management practices
- * Waste-activated sludge processes
- * Water-based painting
- * Gasoline, diesel fuel
- * Diesel exhaust
- * Asphalt odors
- * Burned coffee/food
- * Brush/wood burning
- * Ammonia
- * Chlorine

Not Unpleasant

- * Ketones, esters, alcohols
- * Fresh-cut grass or hay
- * Normal coffee roasting
- * Normal food preparation
- * Bakery
- * Perfume
- * Spice packaging
- * Winery



Example

ODORS CHARACTERIZED AS OFFENSIVE

		FREQUENCY				
		Single Occurrence	Quarterly	Monthly	Weekly	Daily
D U R A T I O N	1 minute	NA	NA	NA	VS	S
	10 minutes	NA	NA	VS	S	M
	1 hour	NA	VS	S	M	L
	4 hours	VS	S	M	L	VL
	12 hours+	S	M	L	VL	VL



Challenges for Odour Ordinance Development

- ✓ Lack of understanding ODOUR

**Technical Infrastructure as important as
Administrative Infrastructure**

- ✓ Reluctance to prosecute nuisance
- ✓ Investigation cost prohibitive
- ✓ Political obstacles

United States Summary

- ✓ US-EPA: **NO** federal odour regulation
- ✓ States next in line to regulate odour
- ✓ If states do not regulate,
then **municipalities** may create ordinances
- ✓ Municipal regulations must **harmonize** with State regulations and may **blend** with other nuisance ordinances

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