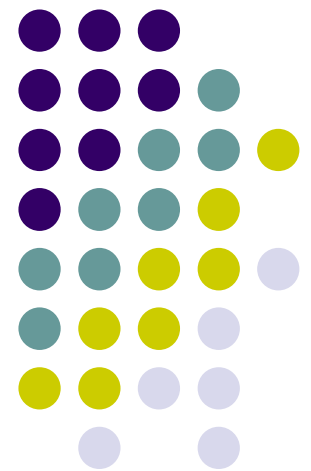


The “Incinerator 9”

Beware the Postman Bearing ICR
Testing Implications
So What Did Greensboro Tell EPA?
Be Afraid...Be Very Afraid!





Background

- Sewage Sludge Incinerators (SSI) Currently Regulated Under 40 CFR Part 503-Subpart E
 - Pollutant limits, general management practices, monitoring, reporting and recordkeeping
- Approximately 230 SSIs in United States
 - Incinerating ~17-20% of nation's biosolids
- Two Types of SSIs
 - Multiple Hearth Incinerators (Older Design)
 - Fluidized Bed Incinerators (Newer Design)



The Postman Cometh...

- EPA Information Collection Request (ICR)
 - <Ten Entities...Under the OMB Radar Screen
 - You Want Us to Test for What???
- Budget Buster (~\$40,000+/incinerator)
 - You Want it When?
 - Shot or Hung?
- Call to EPA Contact/Author of Regs
 - You've Never Been to a POTW and You've Never Seen a Sewage Sludge Incinerator?

Information Collection Request



- ICR Authority: Clean Air Act Section 114
- 55 Page Document/Form + Testing
- Information to Develop SSI Maximum Achievable Control Technology (MACT) Standards under Section 129
 - MACT Standards based on top 12% of best performing sources!
- Court Ordered Schedule for EPA
 - Final Regulation by December 2010



The “Incinerator 9”

Nine Wastewater Agencies with 20 SSIs

- City of Greensboro, North Carolina
- Allegheny County Sanitary Authority-Pittsburgh, Pennsylvania
- Central Contra Costa Sanitary District-Martinez, California
- City of Columbia Wastewater Division-Columbia, South Carolina



The “Incinerator 9”

- Metropolitan Council Environmental Services-
St. Paul, Minnesota
- Metropolitan District Commission – Hartford,
Connecticut
- Township of Wayne – Wayne, New Jersey
- Upper Blackstone WPAD, Millbury,
Massachusetts
- Ypsilanti Communities Utilities Authority –
Ypsilanti, Michigan

40 CFR Part 129 Pollutants



Cadmium	Carbon Monoxide	Dioxin/ Dibenzofurans
Hydrogen Flouride	Lead	Mercury
Opacity	Oxides of Nitrogen (NOx)	Sulfur Dioxide
Particulate Matter (PM 2.5) Filterable Particulate Matter Condensable Particulate Matter		



“Additional Required Testing”

Antimony	Arsenic	Beryllium
Chromium	Cobalt	Manganese
Nickel	Phosphorus	Selenium
Hydrogen Fluoride	Polychlorinated Biphenyls (PCB)	Polycyclic Aromatic Hydrocarbons

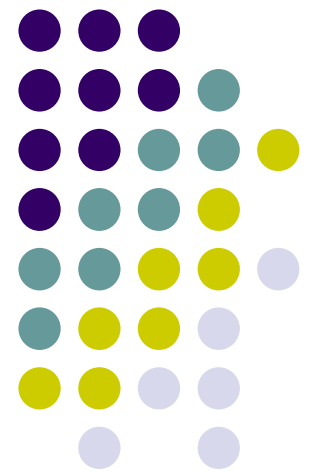


Site Visits by EPA

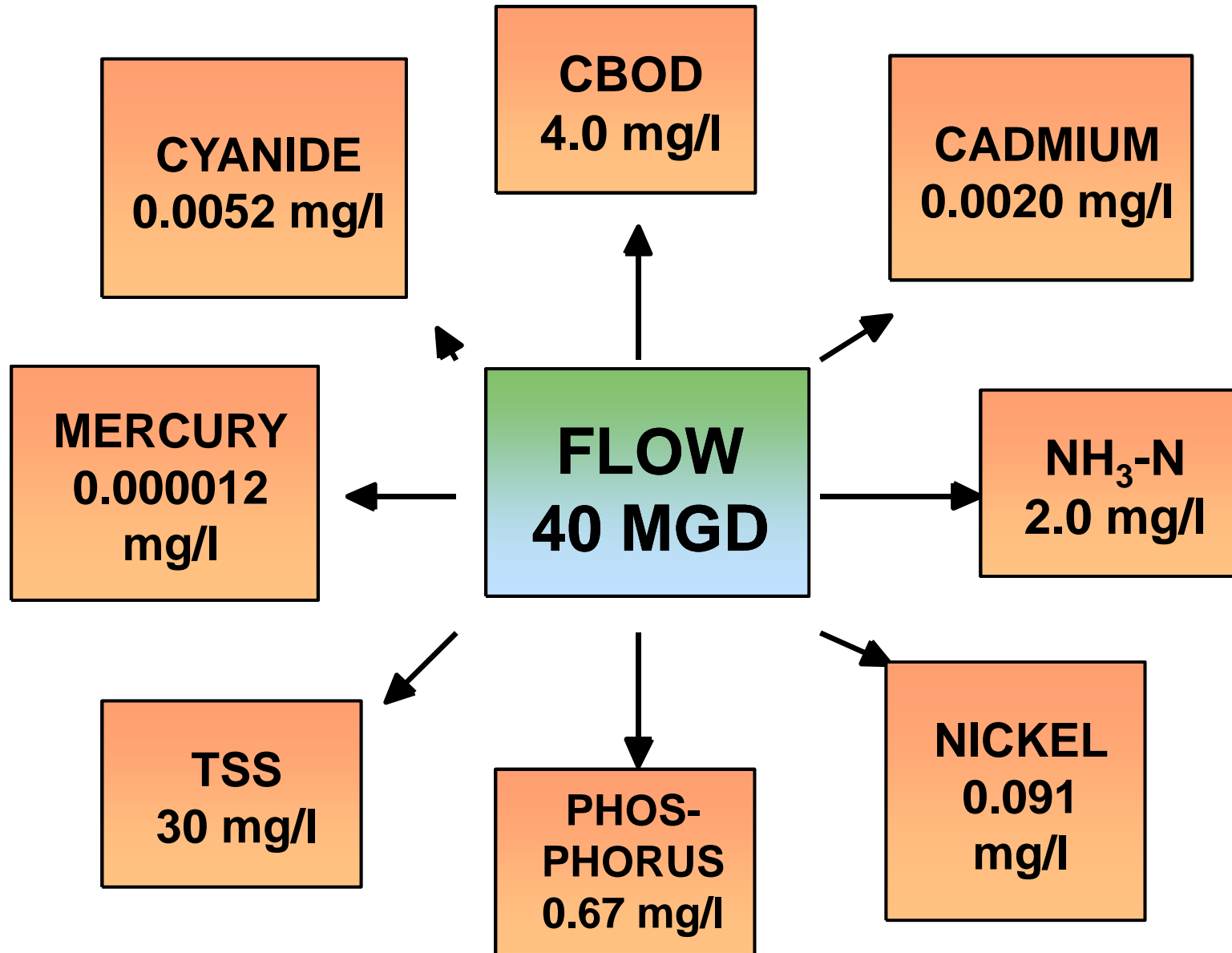
- Greensboro, North Carolina
 - Fluidized Bed Incinerator
 - We won the EPA lottery again! What are the odds?
 - If only I had that luck in Vegas or the NC lottery....
- Hampton Roads Sanitary District (HRSD)
 - Multiple Hearth Furnace(s)
 - Not part of the ICR
- Office of Air in Research Triangle Park, NC

So What Did Greensboro Tell EPA?

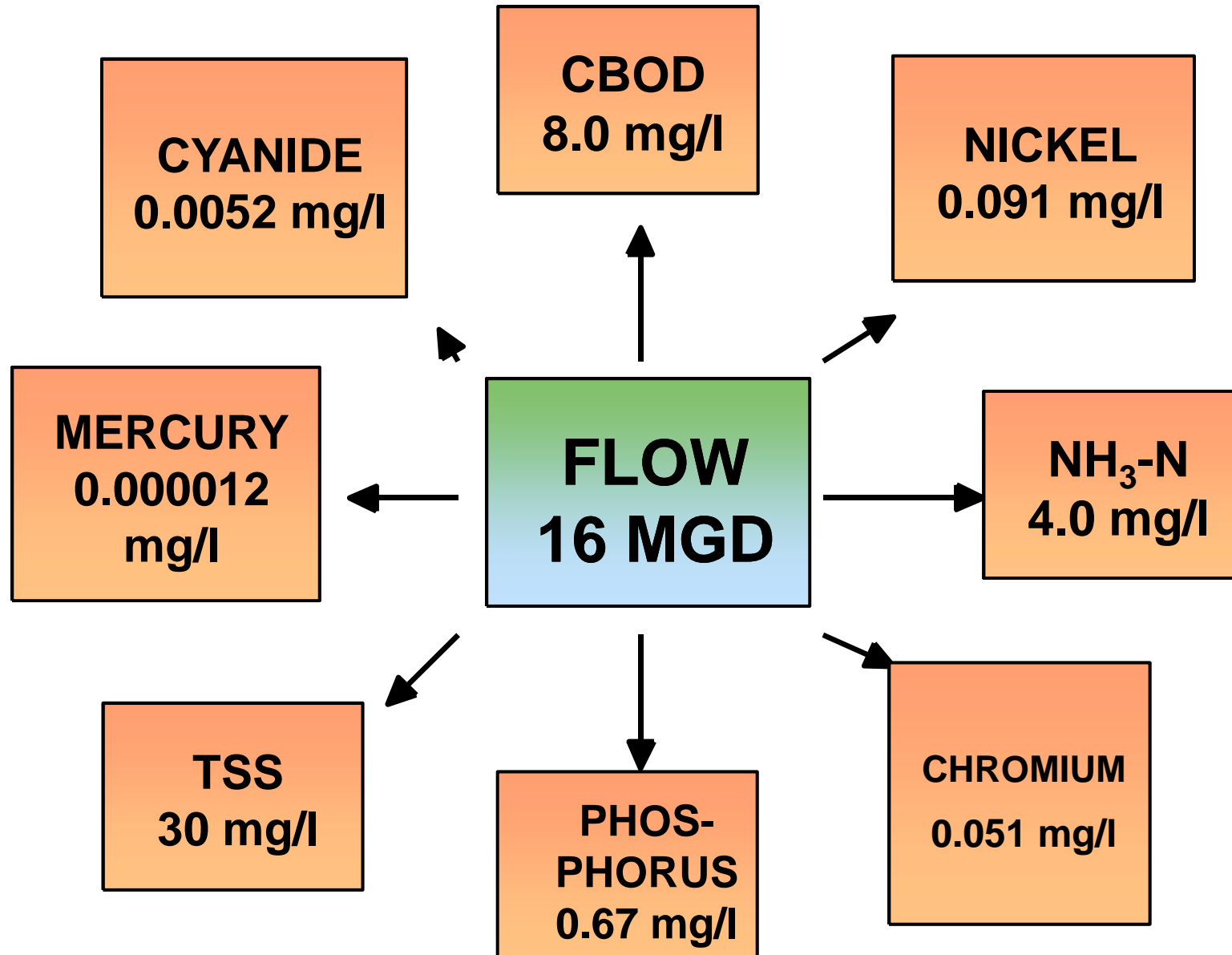
“WW Treatment 101”
“You Are What You Eat”
“Careful With the Data and Your
Assumptions”



T.Z. OSBORNE NPDES LIMITS



NORTH BUFFALO NPDES LIMITS



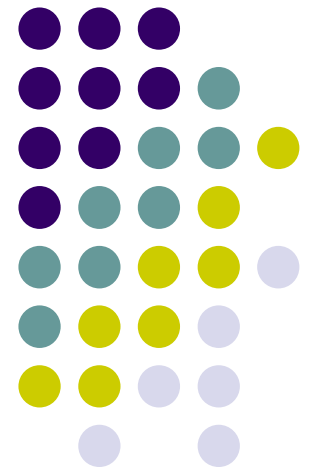


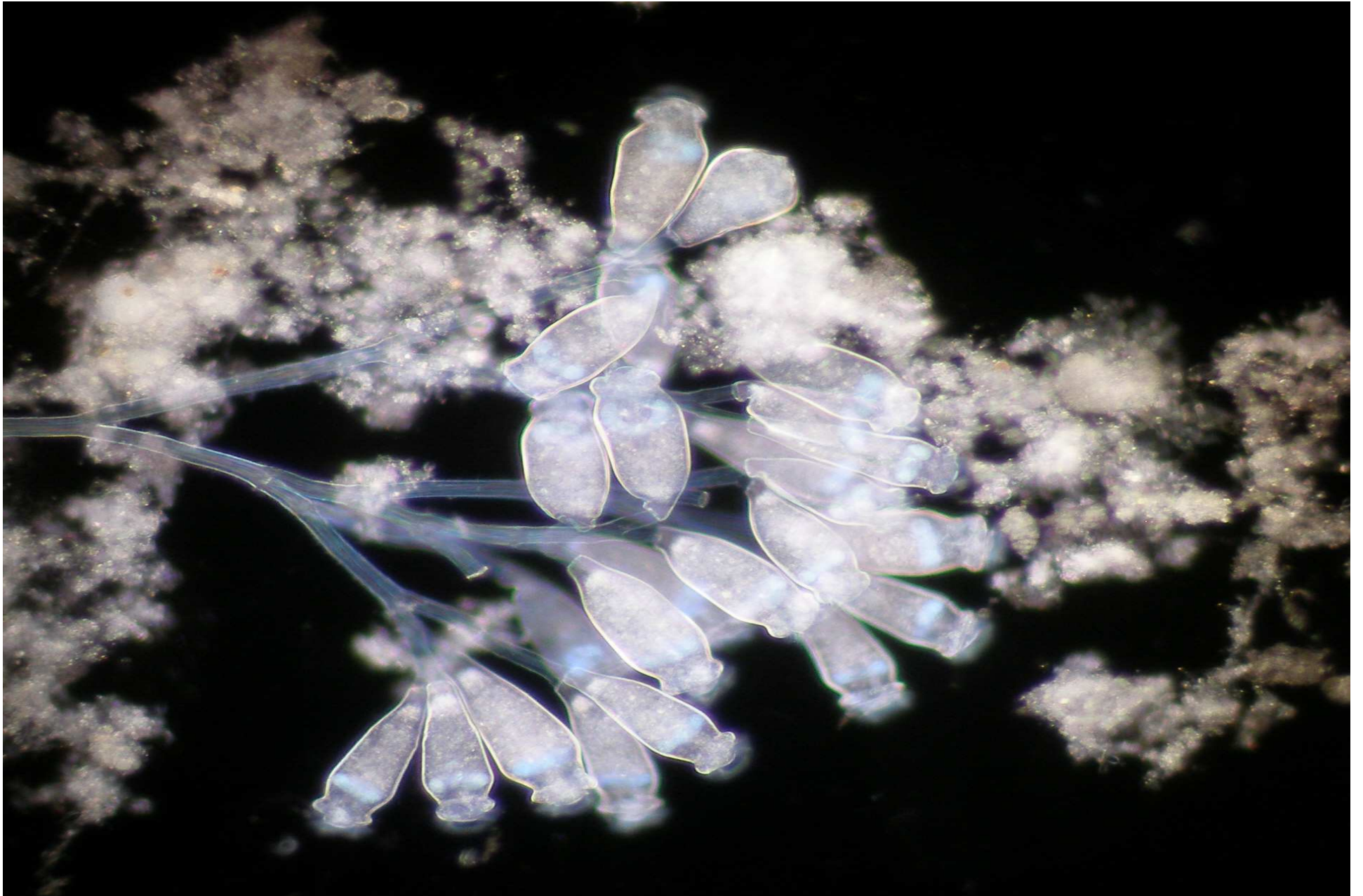
NPDES Permit Limits

- Most stringent limits in the State of NC
 - Mercury limit is WQS = 12.0 nanograms per liter
 - Cadmium limit is WQS = 2.0 micrograms per liter
- Some at limits of technology: CBOD₅ = 4 mg/l
- Whole Effluent Toxicity-Chronic/daphnia
 - Both POTWs passing using 100% effluent
- Nutrient Limits: Phosphorus and Ammonia
 - Jan 1, 2010 Annual Mass Phosphorus Limit based on 0.67 mg/l

“You Are What You Eat....”

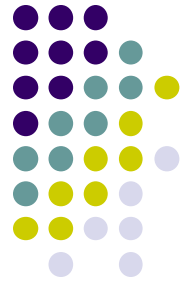
What Our Bugs and Our
Incinerator Consume





Activated Sludge Microorganisms

Industries in Greensboro Subject to EPA Categorical Standards



- (2) Pharmaceuticals *40 CFR Part 439*
- (5) Electroplating *40 CFR Part 413*
- (7) Metal Finishing *40 CFR Part 433*
- (2) Transportation Equipment Cleaning *40 CFR Part 442*
- (1) Centralized Waste Treatment *40 CFR Part 437*
- (3) Organic Chemicals, Plastics and Synthetic Fibers *40 CFR Part 414*
- (3) Electrical/Electronic Components *40 CFR Part 469*

“You Are What You Eat....”



- Don't Be Misled by the Categories...
 - “Pharmaceuticals”...P&G Crest Toothpaste and Vicks Formula 44 Cough Syrup
 - Organic Chemicals
 - DEET (one of 2 manufacturers in the U.S.)
 - Affiliated with rendering plant...fats esterification/ extraction to be used in animal feeds
 - Specialty Organic Chemical Company
 - Electroplating/Metal Finishing = *54,299 gpd actual total flow for entire category*

Non-Categorical Industries >25,000 gpd Process WW Flow



- Aramark (Industrial Laundry)
- Ashland (Water Treatment Polymer Manufacturer)
- Lorillard (Tobacco Products)
- Qualicaps (Capsule Manufacturer)
- Evonik Stockhausen
 - Superabsorbent powder (for baby diapers)

Non-Categorical Industries >25,000 gpd Process WW Flow



- ZINK (Thermal Photographic Paper)
- Textiles
 - Cone Mills (Denim dyeing Operation)
 - Elastic Fabrics (Synthetic materials, spandex)
 - Precision Fabrics (Face pads, medical material)
 - Royal Carolina (Non-woven screen printing)

%Industrial Loading at Greensboro POTWs



- 33 Significant Industrial Users (SIUs)
 - Actual Industrial Flow/Loading = 2.16 MGD
 - Permitted Industrial Flow = 4.2 MGD
- North Buffalo
 - 0.203 MGD Actual Industrial Flow = **2%**
 - 0.32 MGD Permitted Industrial Flow = 3%
- T. Z. Osborne
 - 1.96 MGD Actual Industrial Flow = **9%**
 - 3.9 MGD Permitted Industrial Flow = 9.8%

40 CFR Part 503

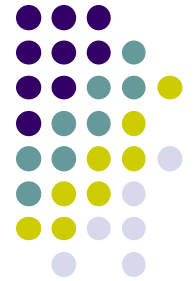
High Quality Sludge (mg/kg)



Date	Arsenic	Beryllium	Cadmium	Chromium	Lead	Mercury
1-09	< 1.86	<0.929	2.51	36.8	17.3	0.205
2-09	4.90	<0.980	2.94	30.4	20.6	0.314
3-09	9.77	<0.954	2.06	47.6	27.6	0.210
4-09	7.83	<0.951	1.33	35.6	16.0	0.2281
5-09	9.98	<0.958	1.90	36.9	17.2	0.096
6-09	10.5	<0.887	1.61	50.8	25.5	0.390
7-09	9.59	<0.896	1.45	42.3	19.1	0.358
8-09	8.38	<0.900	1.76	42.9	22.9	0.1799
9-09	8.17	<0.933	1.94	51.7	32.2	0.299
10-09	11.6	<0.500	1.78	31.6	15.8	0.227
11-09	10.1	<0.930	1.76	40.0	15.0	0.410
503	41	N/A	39	N/A	300	17

40 CFR Part 503

High Quality Sludge (mg/kg)



Date	Molybdenum	Nickel	Selenium	Copper	Zinc	% Solids
1-09	16.7	12.1	<1.86	263	731	26.9
2-09	13.8	10.5	7.49	218	520	25.5
3-09	12.3	14.6	<1.91	188	632	26.2
4-09	14.4	12.3	<1.9	213	596	26.3
5-09	12.0	12.4	5.58	234	566	26.1
6-09	19.2	21.8	3.37	265	840	28.2
7-09	8.67	14.9	5.77	262	591	27.9
8-09	19.5	25.0	2.12	293	756	27.8
9-09	29.9	19.3	4.09	306	952	26.8
10-09	13.8	14.8	6.00	263	577	26.4
11-09	14.2	14.0	4.78	280	584	26.8
503	75*	420	100	1500	2800	N/A



Why Is This Happening?

- EPA Says:
 - Since sewage sludge from publicly owned treatment works is burned for *disposal*, not energy, it should be classified as a solid waste subject to Clean Air Act section 129 requirements
 - Sewage Sludge = Solid Waste
- POTWs Ask:
 - What about the domestic waste exclusion?
 - What about the 503 Regs?



What Happens Next?

- EPA Could Rule that Biosolids are not a “solid waste” (not likely)
- Hopefully Two Sets of Standards
 - Multiple Hearth Incinerators
 - Fluidized Bed Incinerators
- Special Interest Groups: Subcategorization is illegal..All must meet most stringent stds.
 - If not two sets of standards...all Multiple Hearth Incinerators are toast! (pun intended)



Other Items to Ponder...

- Greensboro started incinerating sludge in 1970
 - Availability of land and concern over organic chemical discharge (that is no longer here)
- Greensboro POTWs currently at ~50% capacity
- Hauled Waste: City of Greensboro accepts only domestic septage
- Influent organics all virtually non-detect using 5 ppb lower reporting level (except CI by-products)
- Only 4 incinerators in NC: High Point, Greensboro, Asheville, Cabarrus County



Be Afraid...Be Very Afraid

- Standards Based on Very Limited Data Set
 - Less than 10% of the SSIs in the country
 - Therefore: 12% best performing of the 10% chosen
- Variability in Metals Concentrations
 - EPA “shocked” at variability of metals concentrations
 - Remember: “You Are What You Eat”
 - %Industrial Loading Variability for “Incinerator 9”
- *Greensboro is afraid we may be in the 12%*
 - For unique reasons that are not representative
- Schedule, not Science is Driving the Process



What Can You Do?

- If you incinerate...
 - *Retire if you can!*
 - Review your biosolids concentrations
 - Watch for proposed regs and read carefully to assess the implications for your POTW
 - Respond quickly to any NACWA request to comment on regulations
- Land Application Folks – Don't be complacent..There may be ultimate implications for you too!



WASTEWATER TREATMENT....
the front line of environmental protection!

