When a New Industry Moves In, What Does it Mean for Pretreatment

City of Vancouver, Washington
Outline

- Vancouver and Port of Vancouver
- Prospective industries
- Case Study: Gelatin vitamin supplements
City of Vancouver

- Population 162,000
- Incorporated 1857
- Fort Vancouver National Site
- Urban / suburban community
City of Vancouver
Wastewater - Pretreatment

- Service area population 200,000
- 57 square miles – 700 miles of sewer
- Two wastewater treatment plants – 44 MGD design
  - 21 MGD typical
  - Secondary treatment, partial nitrification, incinerator
- 18 SIUs (10 CIUs)
  - Semiconductor, metal finishing, TEC
  - CWT, pesticide
- 9 MIUs, 50+ other
- FOG program
Port of Vancouver

- Subaru imports / exports
- Raw copper ore, metal shred and potash exports
- Wind energy
- Steel fabrication
- Aluminum extrusion
- Grain malting & terminals
- Metals & plastics mfg
- Fruit canning
Dietary Supplement Manufacturer

- Multi-Vitamin gelatin and pectin candy
- Mix ingredients, cook, form in molds
- Wastewater from vessel cleaning and rinsing

2006

- Submitted application
- 1,200 gpd
- Wastewater characteristic
  - Slight alkaline
  - High BOD / low suspended solids
  - Trace Ti, Zn, Mo, Se

Pluto downgraded from planet to dwarf
Dietary Supplement Manufacturer

- Industry Categorization – 439 Pharmaceutical Manufacturing Point Source Category
- Did not categorize base on three factors:
  - No solvents in manufacturing process
  - Do not manufacture pharmaceutical active ingredients
  - Dietary supplements are considered foods and not drugs

LETTER OF DISCHARGE
- Quarterly monitoring – 1 year
Dietary Supplement Manufacturer

2007

- 4,000 gpd
- Elevated BOD & solids
- Acidic pH
- Elevated zinc

2008

- Improvements to zinc, BOD, O&G after implementing BMPs and increased vault pump out
- Plan for further improvement pH
Dietary Supplement Manufacturer

**2009**

- pH neutralization system – 500 gal tank
- Wastewater Discharge Application
- Draft permit
- Announced plan for expansion

Boeing’s 787 Dreamliner maiden flight
Dietary Supplement Manufacturer

2010
- Issued MIU permit
- 6,900 gpd limit / actual 8,800 gpd
- pH fluctuations

2011
- 10,700 gpd limit → 21,000 gpd limit
- Discovered lateral damage / repaired
- Facility expansion – 2X production
- Engineer Report – new pretreatment system

Burj Khalifa opens in Dubai – 2,723 ft
Dietary Supplement Manufacturer

- Growing 2010 – 2011
- Increase production shifts (800 employees)
- Additional manufacturing bldg
- 21,000 gpd
- New pretreatment system
  - Engineered for zinc precipitation and continuous flow
  - Constructed under guise of production facility – same engineer
Dietary Supplement Manufacturer

2011 - 12 Challenges

- Pretreatment system not constructed per engineering plan
- pH change from monitoring location to exit of GI
- Training and response of staff

2012 Improvements

- Design engineer review of built system
- New staff position – environmental compliance / operations
- Training / all – shift coverage of pretreatment system
- Upgraded monitoring, controls & alarms - new monitoring location
Dietary Supplement Manufacturer

Lessons Learned

- Challenge wastewater characterization up front
- Get past the “front man”
- Impress growth plans – plan for optimistic
- Appreciate the “weak” acids
  (citric, ascorbic)