



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

**City of Vancouver, Washington**

# Outline

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



# City of Vancouver

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- ▶ Population 162,000
- ▶ Incorporated 1857
- ▶ Fort Vancouver National Site
- ▶ Urban / suburban community



# City of Vancouver Wastewater - Pretreatment

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- ▶ 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

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- ▶ 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

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- ▶ 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

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## 2007

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

Apple  
introduces The  
iPhone



## 2008

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

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**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

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## 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

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- ▶ 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

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## ▶ 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)



WATER FLOW U:	0.19	GPM
WETWELL LEVEL	0.70	ft
MIX TANK MIXER SPEED	99.34	%
INFLUENT WELL pH	3.98	
MIXING TANK pH	9.92	
SETTLING TANK pH	7.19	
SEPARATOR pH	10.67	
EFF SEPARATOR pH	8.53	