

# Herbicide Monitoring in Freshwater Creek

PowerPoint Presentation

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ENVS 310

- 1  Herbicide Monitoring in Freshwater Creek  
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- 2  Problem Statement
  - Freshwater Creek residents are concerned that herbicide spraying in their watershed is introducing objectionable quantities of toxins in the creek.
- 3  Introduction
  - Increased logging in freshwater creek watershed
  - Citizens complain of flooding and highly turbid water
  - Inconclusive data warrants more comprehensive testing.
- 4  Questions to Ask
  - Are pesticides in the water? Yes, they are more widespread than we thought. They are found in every stream and river near populated areas.
  - Should there be reason for concern? Yes, we do not yet adequately understand the complex patterns of pesticide exposure that actually occurs.
- 5  Logging Practices  
Clearcutting results in loss of vegetative cover, which decreases:
  1. rainfall interception
  2. evapo-transpiration,
  3. slope and soil stability,
  4. habitat features,
  5. shade,
  6. foraging opportunities
- 6  Purpose of Forestry Herbicides
  - Regeneration of clear-cut sites
  - Reduction of fuel hazard for fire prevention
  - Maintenance of right of waysPrivate Land:
  - Quantitative and qualitative timber yield objectives (a.k.a. \$\$\$\$\$)
- 7  Herbicides Used
  - Oust® (Sulfometron methyl)
  - Roundup (Glyphosate)
  - Garlon 3A and 4 (Triclopyr)
- 8  Herbicide Application
  - Pre-Emergent (spring and fall)
  - Hack and Squirt
  - Foliar Spraying

- 9  Pre-emergent spraying
- Oust and RoundUp plus surfactants
  - Before or after replanting
  - Used in fall and spring during first 2 or 3 growing seasons after Clearcutting.
  - Reduce sprouting and growth of competing vegetation
- 10  Hack and Squirt (Frilling)
- Garlon 3A or 4 plus diesel surfactant
  - Hack notch in unwanted trees and squirt directly into exposed tissue
  - 5-10 years after regrowth begins
- 11  Foliar Spraying
- Garlon 4
  - Direct spray onto foliage of woody plants
  - Within 2<sup>nd</sup> or 3<sup>rd</sup> growing season
  - Direct stump application also used
- 12  Toxicity
- Depends on:
  - Ingredients in formulation
  - Conditions of exposure
  - Extent of exposure
  - Sensitivity of individual
  - Site specific physical and chemical variables (soil, moisture, temp, topography)
- 13  Surfactants
- Diesel fuel
  - 1. Unregulated and unmonitored
  - 2. Persistent and toxic to birds and fish eggs
  - 3. Listed as possible carcinogen under The Safe Drinking Water and Toxic Enforcement Act.
  - 4. Exempt = "economic poison"
- 14  Diesel (cont.)
- 5. PL reports 50,000 gallons used in HCP
  - 6. Far less toxic vegetable oils are readily available, but no regulatory incentive for use
  - Costs:
  - veggie oil = \$3-5/gallon + special equipment
  - diesel = \$.75/gallon
- 15  Conclusion
- Fate and toxicity are highly site specific and depend on multiple local parameters
  - Monitoring strategies must accompany herbicide use
  - Adequate monitoring includes: timely testing of water, sediment and biological

tissue sampling

16  EPA Recommendations

- Super potent herbicides with unknown risk must be severely restricted
- Herbicides with ability to persist in the environment or bioaccumulate should be restricted
- Least toxic compounds should be used when ever possible, such as replacing diesel oil with vegetable oil.

# Problem Statement

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# Introduction

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Yes, they are more widespread than we thought. They are found in every stream and river near populated areas.
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1. rainfall interception
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# Purpose of Forestry Herbicides

- Regeneration of clear-cut sites
- Reduction of fuel hazard for fire prevention
- Maintenance of right of ways

## Private Land:

- Quantitative and qualitative timber yield objectives (a.k.a. \$\$\$\$\$)

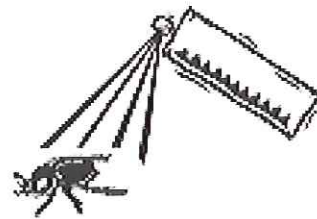
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(Sulfometron  
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# Herbicide Application

- Pre-Emergent (spring and fall)
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- Foliar Spraying



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- Depends on:
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# Surfactants

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## Diesel (cont.)

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