Organic Parks

Basic Toxicology Overview and Public Health Perspective

Rosalind Penney, PhD, MPH
Environmental Health Specialist III

SAN JUAN BASIN public health

sjbpublichealth.org | WE PROTECT HUMAN AND ENVIRONMENTAL HEALTH AND INSPIRE WELL-BEING IN OUR COMMUNITY.
Disclosures

• The information in this presentation is not a full representation of toxicology or chemicals

• The SJBPH does not specialize in toxicology or risk assessments, and the information provided herein is for education purposes only
Toxicology basics

• Definition/description
  – Use science to determine how certain chemicals harm us under particular conditions

• Basic premise:
  “Poison is in everything, and no thing is without poison. The dosage makes it either a poison or a remedy.” – Paracelsus
Dose and adverse response

- **Dose (mg)**: 5, 10, 15, 20, 25, 30
- **Response (%)**: 100, 50, 0

- **Threshold (NOAEL)**: No observed adverse effect level
- **Groups**: Oversensitized, Pregnant/Nursing Women, Elderly, Children

How are you?
Conventional vs. organic parks

• Resources
  – Information from chemical manufacturers
  – Review of peer reviewed literature

• Special Notes
  – Many chemical exposures each day
  – Which one leads to a health effect?
  – Epidemiology identifies risk, not cause
Conventional products (hazard overview)

• Irritation
  – skin, eye, throat, lungs, stomach

• Specific target organ toxicity

• Carcinogenicity
  – 2,4-D: Possible carcinogen (IARC 2B)
    • Inadequate human data and limited animal data
  – Glyphosate: Probable carcinogen (IARC 2A)
    • Sufficient animal evidence, limited human evidence

*Most hazards stated may be applicable for pesticide applicator*
2,4-D

- Found in many household products
  - Scotts Turf Builder Plus and Weed and Feed Pro
  - Miracle-Gro® Weed & Feed
- Not absorbed well by humans unless swallowed
  - Does not build up in tissues
- No studies found associating 2,4-D with cancer
- Only health effects seen in applicators
Glyphosate

- Found in Roundup (Scotts) and Ortho products
- Has been found on food products (including organic products)\(^4\)
- Associated with other health effects such as rheumatoid arthritis and acute kidney injury\(^5,6,7\)
- Research on carcinogenicity is inconclusive
  - Research that refutes cancer data are subsidized by major manufacturer of glyphosate
Organic products
(hazard overview)

• Chemical hazard:
  – Overexposure to dust may cause short-term upper respiratory irritation

*Most hazards may be for pesticide applicator
Conclusions

• No clear way to assess true exposure/health effects of pesticides in parks

• Majority of parks around the nation are not pesticide-free

• This does not mean there is no risk
References


