Agency of Agriculture Pesticide Regulation Program

VERMONT CITIZEN'S ADVISORY COMMITTEE ON LAKE CHAMPLAIN

NOVEMBER 13TH, 2017

Environmental Protection Agency (EPA) Pesticide Regulation

- The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
  - Endangered Species Act
  - Registration Review (initial)
  - Re-Evaluation *every 15 years*
- FIFRA Standard- "will not generally cause unreasonable adverse effects on the environment"
    - any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide, or
    - a human dietary risk from residues that result from a use of a pesticide in or on any food inconsistent with the standard under section 408 of the Federal Food, Drug, and Cosmetic Act (FFDCA).

Environmental Protection Agency (EPA) Pesticide Regulation

- Registration of products at a National Level based on risk characterization:

  Risk = toxicity x exposure

- Evaluates toxicity: human health (applicator, public), environment
- Evaluates exposure scenarios
  - Dietary (Food Quality Protection Act) FQPA—(1996, all products re-evaluated/registered. Many products/chemistries were not re-registered.)
    - Food
    - Water –Drinking water included in the dietary risk assessment.
  - Ecological- Multiple exposure models (non-targets)

Environmental Protection Agency (EPA) Pesticide Regulation

Registers the active ingredients and product label(s) in accordance with the risk assessments completed.

Product will be labeled for:

- Site (where)
- Pest
- Application Rate (How much)
- Personal Protection Equipment (PPE)
- Environmental Precautions
- Signal Word (Caution, Warning, Danger/Poison)
- Restricted or General use Classifications (federal)

Vermont Pesticide Regulation

The Vermont Agency of Agriculture, Food & Markets has primacy over pesticide use in the state. It is *not* a federally-delegated program.

In Vermont use includes

- Sales
- Storage
- Mixing/loading
- Applications
- Disposal
- Spill clean ups, and
- Making recommendations on products

Vermont Product Classifications

Vermont: Products are further restricted based on state-use patterns and other concerns.

Vermont "Restricted Use"

- Federal (RUP)
- Class A (state-restricted use)
- Permit-only (by regulation or policy)

Products are registered in state, *annually*

Vermont "General Use"

- Class B - Controlled Sale
  - generally, turf products that contain greater than 3% active ingredient
- Class C non-turf "homeowner products"
  - Includes Minimum Risk Pesticides (state registration req'd)

Vermont Sales Locations

Vermont: Sales of all products, except Class C, must be done by a licensed dealer.

Dealer types:

Class A dealers (certification req'd)

- Federal RUPs
- Class A (state-restricted use)
- Permit-only

Class B dealers (certification req'd)

hardware stores, nurseries or similar that sell Class B and Class C products

Class C retail license (no certification req'd)

Vermont Applicator Requirements

Vermont has additional requirements for certification, for increased worker protection and homeowner protection.

Who needs what type of certification depends on class of product used and where it is being used.

- In Vermont, as more products are restricted, more applicators must seek certification.
- Anyone using class B (or higher) products in the course of their employment on their employer's property (non-Ag) must be certified.
- Anyone making an application on other people's property of any type of product must be certified.

Agriculture, forestry and greenhouses have separate, but similar rules

Vermont Applicator Requirements

For agricultural workers:

- Workers must be aware, trained and protected from pesticide residues. This applies to organic and conventional farms

Applicators must be 18 years old

Direct supervision:
Federal definition is non-specific, many states have a required response time of several hours or phone call response time.

In Vermont—direct supervision is within line of sight or hearing.
Not a cell phone. Not a car ride.

Vermont Use Patterns

Broad categories of use

- Homeowner (DEET, sanitizer wipes, disinfectants, home & garden products)
  - Includes minimum risk (25b) and turf products
- Agriculture
- Forestry
- Terrestrial Invasive Plants
- Turf
- Ornamentals
- Seed treatment
- Aquatic (DEC permit required)
- Rights-of-way (railroad, roads, utilities)
- Structural Pest Control (residential & commercial buildings, food processing)
- Mosquitos and ticks
- Larvicide

Vermont Permits Issued

Permits: Control products allowed, may limit amounts used, and requires certified applicators. Requires methods of public notification. Many of these permits are not needed in other states.

Permit Types:

- Golf Course,
- Rights of Way,
- Mosquito Larvicide,
- Aerial (application method),
- Bird/animal Control,
- Experimental Use

ANR also issues permits:

- Aquatic Nuisance
- Pesticide General Permit (discharge permit, not use)

Vermont Pesticide Disposal

- Homeowner pesticide disposal program paid for through the Agency at solid waste districts and at household hazardous waste events. Funded by registration fees.
- Technical assistance to companies that have excess or obsolete products.
- Provide financial assistance for situations where no owner can be identified, or is beyond the means of an identified party to have proper disposal.
- RCRA authority under an MOU

Vermont Enforcement

Enforcement of State and Federal pesticide laws related to any part of ‘use’ for all products, in all classes and in all industries.

Can pursue both civil and criminal enforcement.

Combined Enforcement program for pesticides, animal feed, fertilizer and seed.
-4 field agents with specific territories
-4 program staff in Montpelier, and
-2 chemists in Burlington/Randolph.

With assistance from shared enforcement staff (2) and licensing staff (2)

Agency of Agriculture Water Quality Monitoring

- Groundwater & Surface Water Monitoring
  - Data Available for Regulatory & Management Decisions
  - Recent retirement in program, re-focus of program with new hire.
  - Coordinating with WQ farm coordinators

Growth Curve of Monitoring Program
Origins & Pathway to Current Comprehensive Program

- Corn Herbicides (w/ Atrazine) Since 1986 (Initial Priority)
- Nitrate-N in Groundwater / Drinking Water (Emerged As Priority)
- On-Farm Monitoring Wells & Surface Waters
  - (Nutrients (N / P) & Bacteria)
- Technical Assistance, Education & AAP Compliance
  - BMPs & Cost Share Funding for SFOs w/ Conservation Districts & NRCS
- Farm Permitting & Inspection (LFO & MFO Nutrient Mgmt Plans)
  - Groundwater Regulatory Authority
- Act 64 Integration & Support: RAPs (Required Agricultural Practices)

Management of Atrazine In Vermont

Atrazine is a commonly used herbicide in Vermont and the active management of atrazine is a cornerstone of the pesticide enforcement, applicator training and water quality monitoring programs. When atrazine detections occur, the State of Vermont works directly with landowners and recommends alternative management practices and prevention techniques known to reduce the likelihood of future detections.

Vermont has been actively managing atrazine to minimize exposures since 1986.

This approach has been successful in mitigating risk to Vermonters and the environment as demonstrated by the low number of detections that have occurred over the years and the low concentration of those detections, when they do occur.

Range & Frequency of Atrazine Detections 2007 – 2016 Drinking Water Sources

- Drinking Water Sources 1,021
- Total # Samples 1,677
  - # Samples w/ Non-Detects 1,003 (59.8%)
  - # Samples Not Tested 517 (30.8%)
  - # Samples w/o Results (Pending) 0
  - # Samples: Positive @ <0.1 ppb 84 (5%)
    Positive @ 0.1 – 1 ppb 72 (4.3%)
    Positive @ 1 – 3 ppb 0 (0%)
    Positive @ > 3 ppb 1 (0.05%)
  - Total # Samples w/ Detections: 157 (9.3%)

Range & Frequency of Atrazine Detections 2007 – 2016 Monitoring Well Sites

- Monitoring Well Sites 17
- Total # Samples 33

  - # Samples w/ Non-Detects 1 (3%)
  - # Samples Not Tested 9 (27.3%)
  - # Samples w/o Results (Pending) 0

  - # Samples: Positive @ <0.1 ppb 1 (3%)
    Positive @ 0.1 – 1 ppb 10 (30.3%)
    Positive @ 1 – 3 ppb 7 (21.2%)
    Positive @ > 3 ppb 5 (15.2%)
  - Total # Samples w/ Detections: 23 (69.7%)

Range & Frequency of Atrazine Detections 2007 – 2016 Surface Water Sites (On-Farm)

- Surface Water Sites 76
- Total # Samples 282
  - # Samples w/ Non-Detects 160 (56.7%)
  - # Samples Not Tested 63 (22.3%)
  - # Samples w/o Results (Pending) 5 (1.8%)
  - # Samples: Positive @ <0.1 ppb 15 (5.3%)
    Positive @ 0.1 – 1 ppb 21 (7.4%)
    Positive @ 1 – 3 ppb 4 (1.4%)
    Positive @ > 3 ppb 14 (5%)
  - Total # Samples w/ Detections: 54 (19.1%)

Range & Frequency of Atrazine Detections Additional Surface Water Sites: Lakes & Rivers 2001 - 2016

- Surface Water Sites 36
- Total # Samples 950
  - # Samples w/ Non-Detects 654 (69%)
  - # Samples: Positive @ 0.02 - 1 ppb 266 (28%)
    Positive @ 1 – 3 ppb 20 (2.1%)
    Positive @ > 3 ppb 10 (1%)
  - Total # Samples w/ Detections: 296 (31%)
  - 2/3rds of samples with detections greater than 1.0 ppb are from same location

Agency of Agriculture
Pesticide Regulation & Water Quality Monitoring

Some Lessons Learned:

- East Montpelier – Hardwick – Sutton
  - Influence of Soil & Bedrock Conditions
  - Responses to Farm Practices
- The "Social Geology" Timeline
- Value/Necessity of Collaboration
  - w/ Health - Geologic Survey
  - Water Supply - WQ

Toxicity Questions

- Organisms cannot differentiate between “natural” and “synthetic” chemicals
- “Synthetic” does not mean toxic or poisonous
- “Natural” does not mean safe or even low risk
- Chemicals must be evaluated in their biological context of behavior in organisms
- Mode of action, not source, is the concern of toxicologists and users of pesticides
- Not all pesticides are created equal
- Most herbicides act on systems not present in animals (act on photosynthetic pathways)

Relative Toxicity: Comparative Information

Compound	mg/kg
Botulinus toxin	0.00001
Dioxin	0.1
Nicotine	50
Paraquat	95
TFM- Lampricide	141
Caffeine	200
Carbaryl	270
Malathion	370
2,4-D	375
Triclopyr	630
Tebuthiuron	644
Dicamba	757
Aspirin	1,700
Vitamin B3	1,700
Household bleach	2,000
Table salt	3,750
Glyphosate	4,320
Limonene	5,000
Clopyralid	>5,000
Sulfometuron methyl	>5,000
Imazapyr	>5,000

All chemicals are toxic to some degree

- Sugar has an LD50 of 30,000 mg/kg
- Ethanol has an LD50 of only 13,700 mg/kg
- Even water has a recognized LD50 of slightly greater than 80,000 mg/kg

Relative Toxicity:

- Pesticides are chemicals introduced into the environment to perform a function
- The source of a chemical (synthetic vs. natural) is irrelevant when considering its toxicity
- Pesticides should be treated with care and proper respect – but so should household cleaners, gasoline and kerosene, bleaches, paints and all other chemicals