Ontario's Surveillance of Chemical Contaminants in Foods

Including the Baseline Risk Study of Potential Chemical Contaminants in Ontario Farm-Raised Rainbow Trout

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From the Farm Gate to the Dinner Plate

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Overview

- Monitoring and surveillance at OMAF
- Planned and prioritized studies
- Programs: Meat, Dairy, Horticulture
- Baselines: Meat, Cider, Dairy
- Farmed Trout Baseline Study

OMAF Surveillance Programs for Chemical Contaminants

- Determine prevalence and level of chemical contaminants in commodities
- Assist inspection programs in targeting and prioritizing resources to commodities that represent the greatest risk
- Ensure safest food supply for consumers

Surveillance: Planned and Prioritized

- Systematic evaluation of available data (OMAF, CFIA, FSIS, etc.)
- Identification of data gaps
- Risk assessments
- Auditor General's report
- Public perception considered

Chemical residue testing in meats

- Monitoring Programs
  - Provincially-licensed meat plants
  - Sample size: 300 per species tested
  - Carcasses not held
  - Violative results referred to CFIA
  - Monitoring conducted to assess the effectiveness of control programs and compliance with food safety regulations

Chemical residue testing in meats

- Monitoring for Antibiotics
  - 8 product classes per year / rotating basis
  - Sulfas, Tetracyclines, Beta-Lactams and Gentamicin
- 2002-2003
  - 1205 kidney and muscle samples collected
    - one positive (0.08%)

Chemical residue testing in meats

- Monitoring for Carbadox and Sulfas
  - Carbadox in 2002-2003
    - 499 liver samples from BBQ hogs
      - 1.2% in violation of zero tolerance limit
  - Sulfas in 2002-2003
    - 11,524 samples from BBQ hogs
      - 0.41% had violative levels of sulfamethazine
    - 431 urine samples from market hogs
      - none positive

Chemical residue testing in dairy

- Monitoring inhibitors in raw milk
  - focus on beta-lactams, sulfas
  - all raw cow and goat milk producers
    - 6000 samples/month
  - sheep milk to be added soon
- Monitoring inhibitors in pasteurized fluid dairy products
  - focus on beta-lactams and sulfas
  - each processor tested 6 times/year

Inhibitor Monitoring Review

- Full program review initiated to ensure the program is meeting today's food safety objectives and requirements.
- Top to bottom examination including:
  - testing frequencies
  - methods: screening and confirmatory
  - include detection of extra-label use of antibiotics (other than beta-lactams & sulfas)

Chemical residue testing in foods of plant origin

- *55 different fruits and vegetables sampled*

Year	# samples	# violations*	MRL	Technical
1998	596	72	41	31
1999	824	27	19	8
2000	731	29	12	17
2001	736	26	18	8
2002	579	34	20	4

**There may be more than one violation on one sample*

**Two types of violations: MRL and technical*

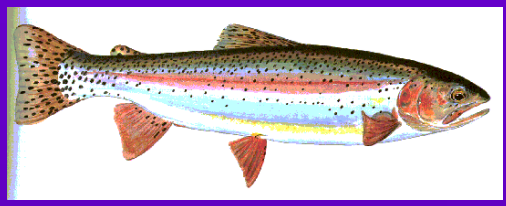
Monitoring: Foods of Plant Origin

- Sprouted seeds
  - 59 samples; 16.9% detected EBDC
- Minimally processed vegetables
  - 62 samples;1.6% violative levels of diazinon.
- Apple cider and juice
  - 113 samples;no pesticide residue violation
  - 9.7% - patulin above 50 ppb.
- Maple syrup
  - 57 samples; 17.5% - lead over 0.5 ppm.

Baseline Studies

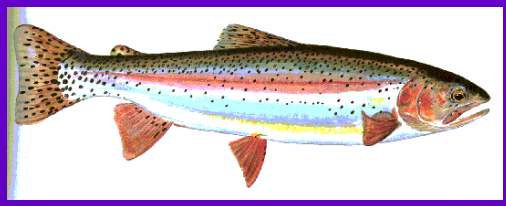
- Unpasteurized Apple Cider
  - 118 samples from 43 pressers in Ontario
  - no pesticide residue above MRLs
  - 53% tested positive for one or more of the targeted pesticides
- Chemicals in Raw Meats
- Raw Milk - Cow, Goat and Sheep
  - veterinary drug residues
  - pesticide/environmental contaminants

Food Fish Safety Program



- *Reviewing Ontario's "boat to throat" food safety systems*
  - *Aquaculture and commercial fisheries*
  - *Transfer of legislative responsibility from MNR to OMAF being considered*
- *Determining program needs across food fish production chain*
- *Science-based: inventory, baseline studies, risk assessment*

Aquaculture Baseline Study



Ontario farm-raised rainbow trout

Chemical contaminants:

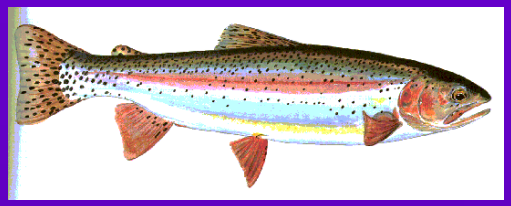
10 veterinary drugs; 5 metals; 33 OC/OP pesticides;

Dioxins/furans/PCB congeners

Sampling across production strata

170 samples from individual lots (66 producers)

Results

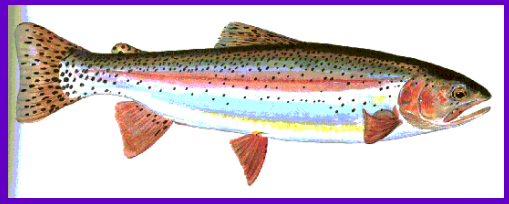


Analyte*	No. of Samples	MDL (ppm)	No. of Residues	Range (ppm)	MRL (ppm)
Veterinary Drugs					
Oxytetracycline	127	0.05	1	0.062	0.1
Florfenicol	127	0.1 ppb	9	0.1-0.3 ppb	0.8 ppm
Metals					
Mercury	59	0.02	18	0.01-0.07	0.5
Lead	59	0.1	1	0.1	0.5
Selenium	59	0.1	58	0.2-0.8	2.0
Arsenic	59	0.01	58	0.27-1.55	3.5

*Vet drug results for RTM. Number of pooled samples (3 fish) for metals.
MDL = Minimum Detectable Level
MRL = Maximum Residue Limit

Residues of 62 analytes not detected in any samples

Discussion



In general, chemical contamination of farmed trout is low

- *No samples of RTM product exceeded current Health Canada guidelines*

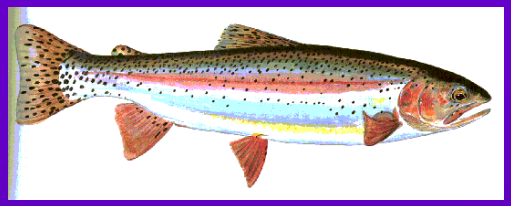
Mercury contamination lower than expected

- *controlled feeding, site selection*

Arsenic and selenium ubiquitous

- *Low levels of selenium may counter negative health effects of mercury*

Discussion



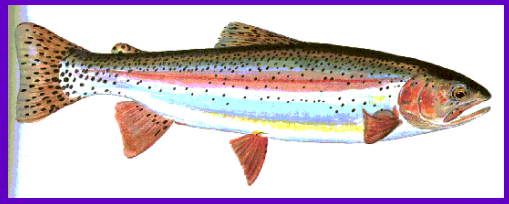
Detection of florfenicol and oxytetracycline in RTM samples was expected

- *Most frequently used drugs*
- *Presence indicates sampling protocol and analysis capable of detection and valid*

Industry aware of issues around antimicrobial use

- *Requires careful observation of dose, withdrawal times*
- *Veterinarian extra-label prescription*
- *Continue voluntary livestock medicine education on proper handling, use of approved drugs, etc.*
- *On-farm food safety programs*

Persistent Organics



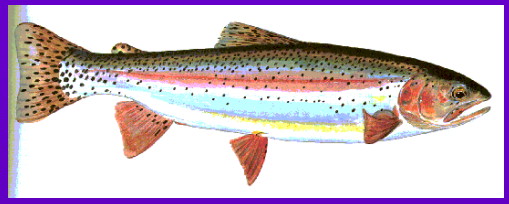
Current CFIA action level guidelines for fish

- *2,3,7,8 TCDD (dioxin): 20 ppt*
- *Total PCB: 2.0 ppm*

No violative samples detected

- *All samples ND for 2,3,7,8 TCDD*
- *Mean total PCB: 0.024 ppm (0.004-0.052 ppm)*

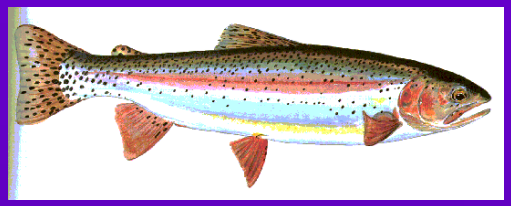
Discussion



Levels of dioxins/furans/dioxin-like PCBs
comparable to levels previously published for farmed salmonids

Contribution to TDI falls well within most consumer consumption patterns

Further Baselines/Analysis



Chemical contaminants in Commercial Fisheries

- *Currently assessing data needs (CFIA, MNR, MOE, DFO, HC)*

Microbial contamination in smoked fish

Central National Database for Chemical Contaminants in Food

- Health Canada initiative
- Need for national collaboration / coordination of chemical food surveillance activities
- Shared web database controlled input and access
- Sharing of information
- Reduction / elimination of duplication