

Aquaculture OHS in Canada

Country Profile Overview, FAO Global
Aquaculture OHS Initiative

Presentation to: Aquaculture OHS postconference workshop
IFish 5 Conference, June 11, 2018, St. John's, NL

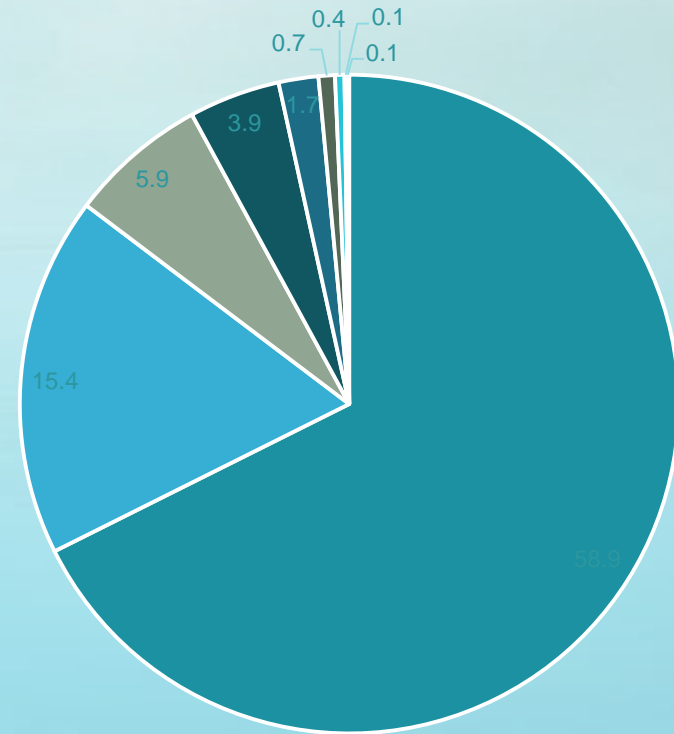
Note: This presentation summarizes key findings from the FAO country profile referenced above. That profile should be available via the FAO in 2019.

Dr. Barbara Neis, Memorial University
Dr. Christine Knott, Memorial University

Aquaculture in Canada

- In every province and territory in Canada
- Largely concentrated in rural areas of coastal provinces

Figure 1.1: Canadian aquaculture species by production volume 2015



■ Salmon ■ Mussels ■ Oysters ■ Trout ■ Clams
■ Other finfish ■ Steelhead ■ Scallops ■ Other shellfish

2016 value of Canada's Aquaculture Industry

\$1.4 Billion

> 50% percent from British Columbia.

Province	Total Production Volume (tonnes)	Total Production Value (\$000)
British Columbia		
Finfish	93,850	474,455
Shellfish	8,535	X
Total	102,385	X
Ontario		
Finfish	4,890	25,400
Shellfish	0	0
Total	4,890	25,400
Quebec		
Finfish	964	8,170
Shellfish	453	1,689
Total	1,417	9,859
New Brunswick		
Finfish	23,391	X
Shellfish	940	X
Total	24,331	162,580
Nova Scotia		
Finfish	6,058	53,580
Shellfish	1,109	2,395
Total	7,167	55,975
Newfoundland		
Finfish	19,684	148,536
Shellfish	3,130	12,847
Total	22,814	161,383
Prince Edward Island		
	464	X
Finfish	22,176	40,690
Shellfish	22,640	X

Aquaculture and employment in Canada

- Direct and indirect employment?
- Seasonal or year-round employment?
- Gender?
- Involvement of first nations/indigenous organizations and workers?
- Temporary foreign workers?

OHS Regulation and Compensation

- Canada has a total of 14 jurisdictions (federal, 10 provincial, and 3 territorial) with responsibility for health and safety laws and regulations
- Only about 10 percent of Canadians fall under the federal *Canada Labour Code*
- OHS systems in Canada are based on the internal responsibility system, which assumes shared responsibility for OHS among employers and workers.
- Workers have three basic safety rights, the Right to Know, the Right to Participate and the Right to Refuse unsafe work.

OHS Regulation and Compensation

Aquaculture operations:

- May not always fall under **provincial occupational health and safety legislation** (if they are classified as part of agriculture), but this needs to be verified.
- Operators not always required to pay into **workers compensation**

Marine aquaculture activities:

- the federal government has **some regulatory responsibility for safety under Marine Law** (Chircop 2006).

Hazards

- Almost no research on aquaculture hazards in Canada.
- Unpublished consultant's report from the 1990s (ENTECH 1992)
- Moreau and Neis (2009) overview of OHS hazards in Atlantic Canadian aquaculture.

ENTECH 1992

British Columbia salmon and shellfish aquaculture

Hazards

1. Diving
2. Heavy equipment
3. Fire arms
4. Construction and Maintenance
5. Hazardous Materials
6. Fire safety
7. Electrical equipment
8. Manual Materials Handling
9. Noise
10. Working alone
11. Communications (on site and with emergency and other services)
12. Transport for injured workers
13. Chemicals (few) antibiotic use

Moreau and Neis 2009

Methods:

- a) review of peer-reviewed and grey literature, online resources,
- b) personal observations made by the authors,
- c) fine-tuned with inputs from a multi-stakeholder advisory committee

Developed

1. detailed outline of the structure of the industry from feed production through seafood processing
2. identified diverse and multiple *potential* OHS hazards associated with the hatchery, nursery and grow-out phases marine aquaculture in Atlantic Canada (salmon/shellfish)

Notable chemicals approved for use in the Atlantic Canadian aquaculture industry

Chemical	Product/Band Name	Hazard
<u>Disinfectants, Parasiticides, Fungicides and Antifoulants</u>		
Benzalkonium Chloride	Benzalkonium Chloride	General irritant; ingestion danger; toxic compounds produced upon combustion[103]
Chloramine T	Chloramine T, Halamid	General irritant; produces chlorine gas upon combustion [104]
Cupric oxide	Aquashield®; Flexguard®; other copper-based paints	Mild skin, eye and lung irritant [105]
Emamectin benzoate	SLICE®	General irritant; ingestion may cause various CNS effects [106]
Formaldehyde	Parasite-S®; Paracide-F®; Formalin-F™; Formacide-B	General irritant; combustible; inhalation danger; CNS depression [107]
Hydrogen Peroxide	Hyperox; Perox-aid®	General irritant; corrosive; toxic; oxidizer [108]
Iodine	Various	Toxic [109]
Ivermectin	Stromectol®	General irritant; potential male reproductive effects [110]
Methanol	Parasite-S®	Flammable; toxic [111]
Sodium hydroxide	Biosolve	General irritant; corrosive [112]
Sodium hypochlorite	Bleach	Corrosive, poisonous, oxidizer [113]
Sulphamic acid	Antec Biofoam	General irritant; corrosive [114]
Teflubenzuron	Calicide®	Potential gastrointestinal or liver toxicant [115]
Potassium Peroxomonosulphate and Sodium alkyl benzene sulphonate	Virkon®	General irritant [116]
<u>Anesthetics</u>		
2-Phenoxyethanol	2-Phenoxyethanol	General irritant; potential effects to hematopoietic system [117]
Tricaine methanesulfonate	Finquel®; Tricaine-S	General irritant; corrosive [118]

Lost time Claims for Aquaculture Operators, Managers, and Labourers by **Nature and Cause of Injury**, Canada and Top 5 Provinces (1996-2015)

(Source: Association of Workers' Compensation Boards of Canada (AWCBC), National Work Injury/Disease Statistic Program (NWISP), Received December 1, 2017)

Region												
Record Type	Canada	(%)	BC	(%)	NB	(%)	NL	(%)	NS	(%)	QC	(%)
Total Cases	2596	-	1369	53	448	17	310	12	120	5	134	5
Nature of Injury												
Traumatic injuries/disorders	2310	89	1227	90	386	86	294	95	103	86	109	81
Systemic diseases/disorders	254	10	139	10	49	11	14	5	13	11	22	16
Injury Causing Events												
Object/Equipment contact	629	24	294	21	113	25	102	33	32	27	29	22
Falls	451	17	243	18	108	24	23	7	22	18	30	22
Bodily reaction/exertion	1179	45	680	50	195	44	117	38	54	45	56	42
Harmful exposures	73	3	25	2	19	4	-	-	-	-	8	6
Transportation accidents	232	9	118	9	12	3	65	21	0	0	6	4
Fires/explosions	6	< 1	-	-	-	-	0	0	0	0	0	0
Harassment/violent acts	5	< 1	-	-	0	0	0	0	-	-	0	0
Other events/exposures	19	1	4	0	0	0	0	0	8	7	5	4

Injury rates

Fatality Injury Rates for Canada 2011-2015 by occupation:

- fishing vessel deckhands (77/100,000) second
- fishing vessel skippers and fishermen/women (57.5/100,000) fifth
- aquaculture and marine harvest labourers (43.5/100,000) sixth

Overall fishing (including deckhands, skippers and aquaculture and marine harvest labourers) had the highest fatality rate in Canada (Tavia 2017a,b,c)

3 Industry OHS Initiatives in Atlantic Canada

1) *FishSafe: A Handbook for Commercial Fishing and Aquaculture* by the Nova Scotia Fisheries Sector Council (2004); drowning, hypothermia and heat-related risks.

2) *NAIA website resource sheet on aquaculture safety hazards* lists hazards and possible injuries by site (open water, hatchery, processing plant and wharf) and providing a list of relevant safety measures

3) *PEI Aquaculture Safety Code of Practice (2008)*. Covers multitude of hazards and safety measures and includes sample OHS policies, voyage plans, safety checklists worksheets and purity requirements for Normal SCUBA tank air.

All OHS areas needing further study

Future of OHS in Aquaculture in Canada

There is a move in Canada to develop a national aquaculture industry regulatory framework to streamline and speed up aquaculture development.

Identifying, eliminating and reducing OHS hazards in the industry, as well as improved surveillance and prevention, should be key ingredients in preparing for an expanded, sustainable industry in the future with access to a skilled, healthy and stable labour force.

Thank you! Questions?

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