FishyLeaks, September 2012

Media Backgrounder: Chemical Culture in Scotland

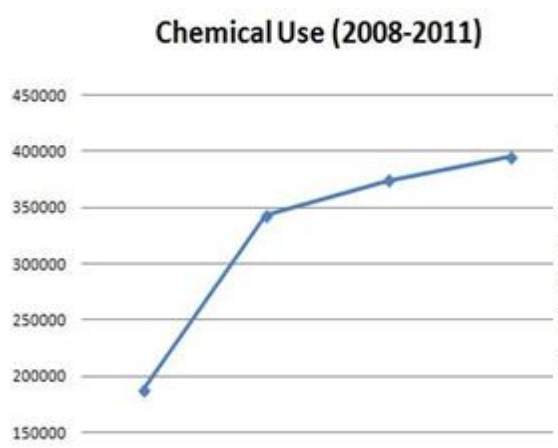
Here's a summary of toxic chemical data made available by the Scottish Environment Protection Agency (SEPA) to GAAIA in July 2012 – published online via FishyLeaks!

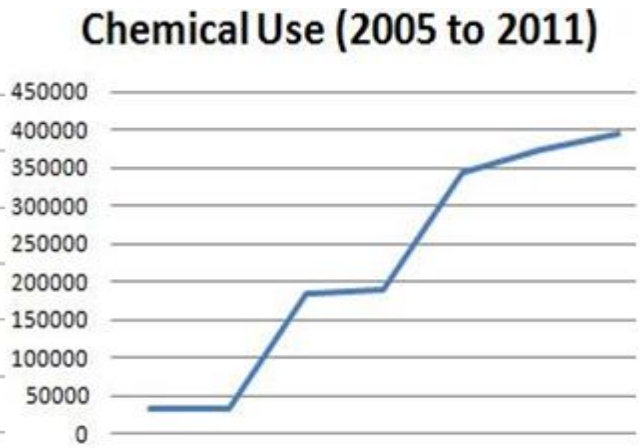
Further information is enclosed in the 'Notes to Editors' – including details on toxicity of Azamethiphos, Cypermethrin, Deltamethrin, Emamectin benzoate and Teflubenzuron; sea lice resistance to chemicals; Scotland's sea lice problem; contamination under salmon farms and of Scottish farmed salmon; sea lice resistance and secrecy by the Scottish Government.

Read data in full via 'Dossier of Chemical Use on Scottish Salmon Farms 2008-2011'

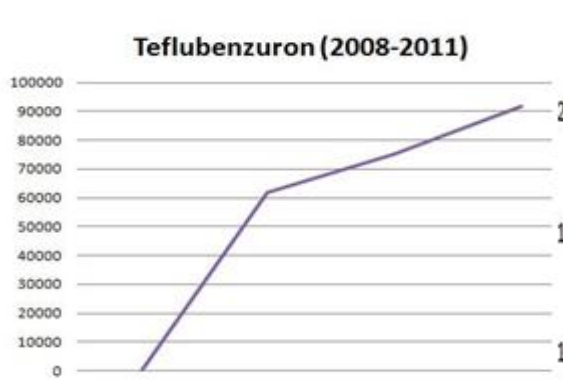
According to the data supplied to SEPA by salmon farming companies as part of the Scottish Pollutant Release Inventory and then made available via Freedom of Information:

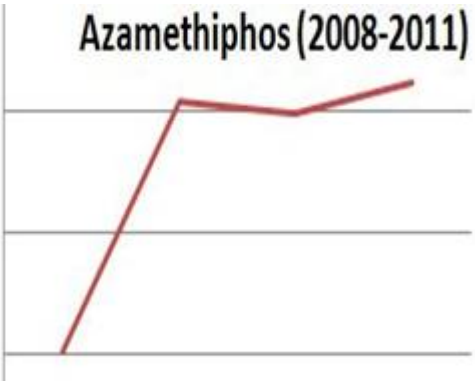
Total chemical use of Deltamethrin, Cypermethrin, Emamectin benzoate, Teflubenzuron and Azamethiphos by Scottish salmon farms more than doubled from 2008 to 2011 - increasing 110% from a total of 188076g in 2008 to 394630g in 2011. Taking the data back to 2005 chemical use rose from 33200g - that's a 12-fold or 1094% increase!





The use of the in-feed chemical Teflubenzuron and the organophosphate bath treatment Azamethiphos have increased alarmingly since 2008. Teflubenzuron use increased from zero in 2008 to 91555.1g in 2011 – with an increase of 22% from 2010 to 2011. Azamethiphos use increased 111% between 2008 and 2011 (up from 100187.0620g to 211667.5004g):





The seven deadliest sinners (actually the 'Filthy Five' due to mergers/acquisitions) in terms of total use of toxic chemicals (2008-2011) were:

Marine Harvest: 384101.3042g
Scottish Sea Farms (Leroy/SalMar): 290798.355g
Hjaltland Seafarms (Grieg): 134209.7g
Lighthouse Caledonia*: 128027.738g
Loch Duart: 89350.988g
MJM Salmon**: 86602.346g
Scottish Salmon Company*: 49777.26g

* Lighthouse Caledonia morphed into the Scottish Salmon Company during 2010
** MJM Salmon was acquired by Scottish Sea Farms in 2007

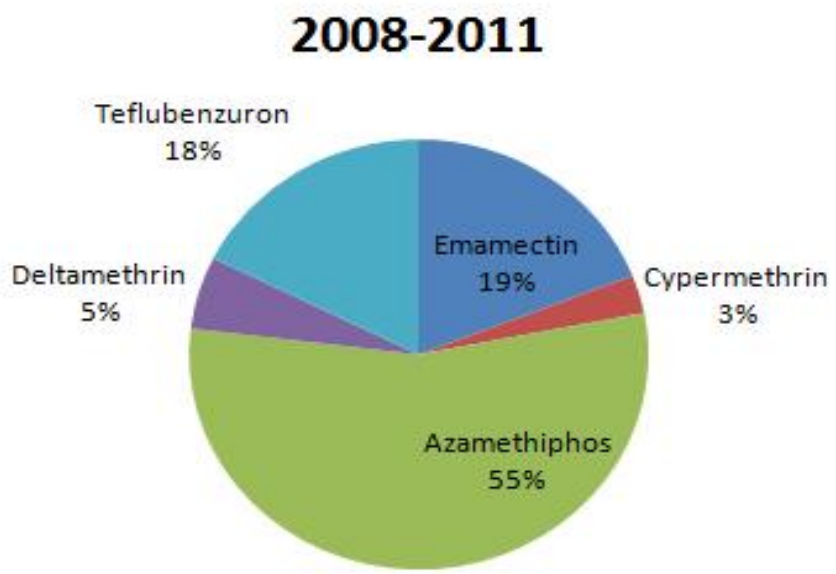
Marine Harvest used toxic chemicals 681 times including:

Cypermethrin: 8564.52g used in total (40 times)
Azamethiphos: 216422.1633g used in total (107 times)
Teflubenzuron: 54000g used in total (1 time)
Emamectin benzoate: 78438.0109g used in total (213 times)
Deltamethrin: 26585.61g used in total (320 times)

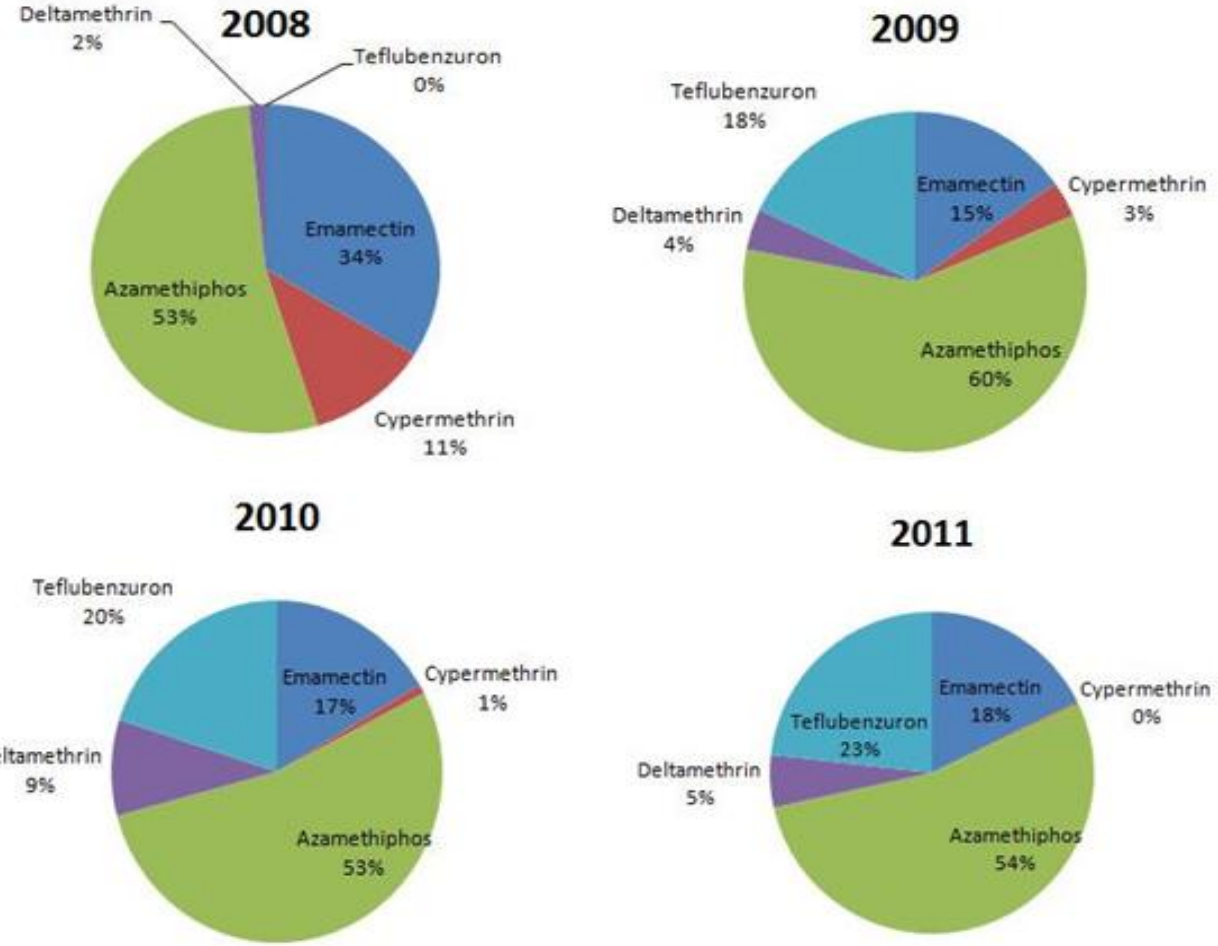
Read all Marine Harvest's discharges of toxic chemicals online here

Loch Duart used toxic chemicals 282 times – including Deltamethrin (100 times), Cypermethrin (71 times), Azamethiphos (64 times), Emamectin benzoate (41 times) and Teflubenzuron (6 times). Read in full via 'Loch Duart – The Toxic Salmon Company'.

In terms of total chemical use (2008-2011), Azamethiphos accounts for over half (55%) with Emamectin benzoate (19%), Teflubenzuron (18%), Deltamethrin (5%) and Cypermethrin (3%).



The relative composition of chemical use has changed since 2008 – but the use of Azamethiphos has always remained the largest component. As Cypermethrin use has declined the use of Teflubenzuron has increased to be the 2nd largest in 2011:



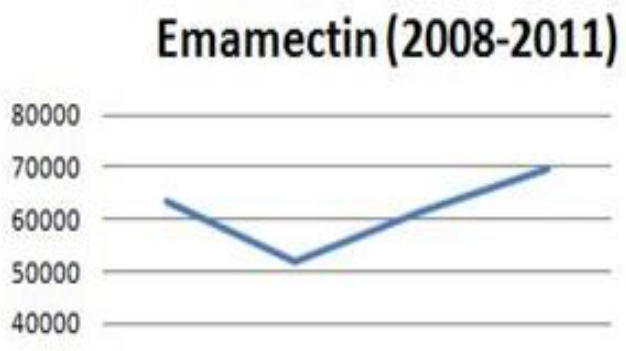
The dirty dozen sites using Teflubenzuron include six instances by Loch Duart – including use in Loch Laxford, a Special Area of Conservation protected under the EU Habitats Directive:

Site Name	Company	Month	Teflubenzuron (g)
Slocka (Site C)	MJM Salmon Ltd	Dec-10	75000
Mid Loch Shell / Pairc - West (A & B cage groups)	Marine Harvest (Scotland) Ltd	Dec-11	54000
Fishnish A	Scottish Sea Farms Ltd	Dec-09	42700
Fishnish B	Scottish Sea Farms Ltd	Dec-09	17300
Ardmair (Isle Martin)	Wester Ross Fisheries Ltd	Feb-11	14000
Badcall Site 11 (Eilean Riabhach)	Loch Duart Ltd	Nov-11	8800
Oldany	Loch Duart Ltd	Dec-11	5600
Foindle East (Laxford Site 1)	Loch Duart Ltd	Dec-11	5250
Slocka (Site C)	MJM Salmon Ltd	Jun-09	1759
Badcall Site 10 (North Eilean na Bearachd)	Loch Duart Ltd	May-11	1661.6
Badcall Site 9 (North Rubha Geisgil)	Loch Duart Ltd	May-11	1375
Badcall Site 11 (Eilean Riabhach)	Loch Duart Ltd	May-11	868.5

The dirty dozen sites using the most Azamethiphos (out of a total of 487 cases) is headed by Norwegian-owned Marine Harvest (Scotland's and the world's largest salmon farming company). By far the largest use of Azamethiphos – double the second largest – was at Marine Harvest's farm at Portnalong on the Isle of Skye.

Site Name	Company	Month	Azamethiphos (g)
Portnalong	Marine Harvest (Scotland) Ltd	Jan-10	15000
Grey Horse Channel	Marine Harvest (Scotland) Ltd	Jan-10	7500
Brei Geo Offshore	Scottish Sea Farms Ltd	Jul-08	7200
Burrastow	Hoganess Salmon Ltd	Dec-10	7000
Cairidh	Marine Harvest (Scotland) Ltd	Jan-10	7000
Camas an Leim (Torridon)	Marine Harvest (Scotland) Ltd	Sep-08	6674.5
Papa, East Head of Scalloway	Hjaltland Seafarms Ltd	Jul-11	5920
Ardgour	Marine Harvest (Scotland) Ltd	Sep-08	5307
Aird Ardheslaig	The Scottish Salmon Company Ltd	Sep-11	5250
Creag an Sagairt	Marine Harvest (Scotland) Ltd	Jan-10	5000
Maol Ban	Marine Harvest (Scotland) Ltd	Jan-10	5000
Fore Holm	Scottish Sea Farms Ltd	Jul-08	4901.4

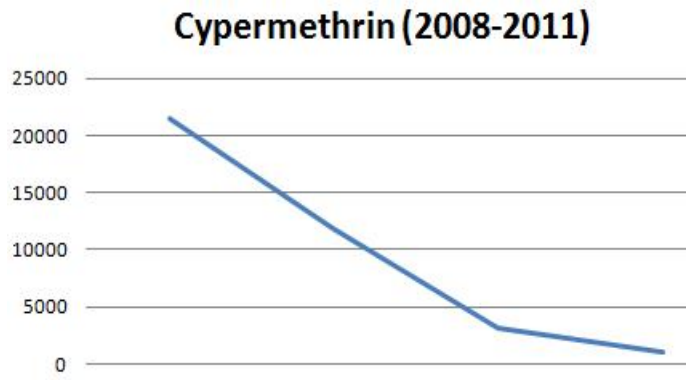
The use of the in-feed chemical Emamectin benzoate is increasing again after a decline in 2009 – up to : 69566.041g in 2011 from 61715.484g in 2010 (a 13% increase in one year):



The dirty dozen sites using the most Emamectin benzoate (out of a staggering total of 1,028 cases) is headed Scottish Sea Farms (owned by Norwegian-based Leroy and SalMar):

Site Name	Company	Emamectin Benzoate (g)
Vidlin North	Scottish Sea Farms Ltd	1474.2
Bellister	Scottish Sea Farms Ltd	1200
Ardgour	Marine Harvest (Scotland) Ltd	1045
Druimyeon Bay (New Site)	Lighthouse Caledonia Ltd	1007
Maol Ban	Marine Harvest (Scotland) Ltd	1001
Gorsten	Marine Harvest (Scotland) Ltd	975
Camas an Leim (Torridon)	Marine Harvest (Scotland) Ltd	924.8000259
Maol Ban	Marine Harvest (Scotland) Ltd	900
Invasion Bay	Marine Harvest (Scotland) Ltd	880
Vidlin Outer	Scottish Sea Farms Ltd	840
Invasion Bay	Marine Harvest (Scotland) Ltd	819.00002
Mid Loch Shell / Pairc - East (C & D cage	Marine Harvest (Scotland) Ltd	810

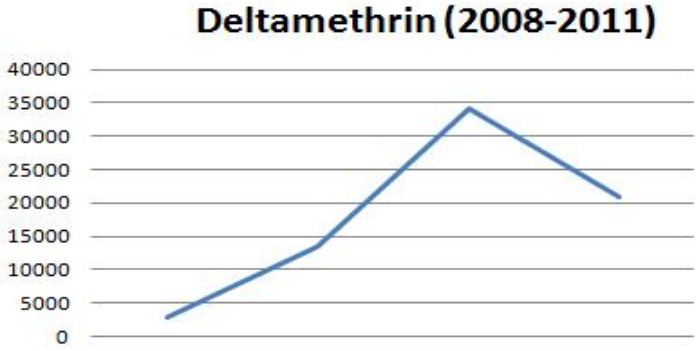
The use of the bath treatment Cypermethrin has declined as sites switch to Azamethiphos, Teflubenzuron and Deltamethrin – falling from 21453.44g in 2008 to 979.08g in 2011:



The dirty dozen farms using the most Cypermethrin (out of 315 cases in total) is dominated by Marine Harvest and Lighthouse Caledonia (a subsidiary of the Scottish Salmon Company – another company listed on the Oslo Stock Exchange in Norway and whose largest shareholder is a Swiss Bank). The highest use of Cypermethrin (with four separate instances in the top ten) was at Lighthouse Caledonia's site at Vacasay in Loch Roag – a Special Area of Conservation protected under the EU Habitats Directive.

Site Name	Company	Month	Cypermethrin (g)
Vacasay, Roag	Lighthouse Caledonia Ltd	Mar-08	840
Vacasay, Roag	Lighthouse Caledonia Ltd	Apr-08	836
Seaforth	Marine Harvest (Scotland) Ltd	Dec-08	618
Isle of Ewe	Marine Harvest (Scotland) Ltd	Apr-09	600
Kyles Vuia East	Lighthouse Caledonia Ltd	Jan-08	600
Scotasay	Marine Harvest (Scotland) Ltd	Dec-08	600
Scotasay	Marine Harvest (Scotland) Ltd	Jan-09	600
Noster	Marine Harvest (Scotland) Ltd	Dec-08	536
Vacasay, Roag	Lighthouse Caledonia Ltd	Jan-08	500
Vacasay, Roag	Lighthouse Caledonia Ltd	Feb-08	500
Geasgill	Lighthouse Caledonia Ltd	Apr-08	450
Seaforth	Marine Harvest (Scotland) Ltd	Nov-08	450

The use of the bath treatment Deltamethrin increased from 2008-2010 (from 2894.605g up to 34061.665g) but dropped off in 2011 (down to 20862.82g) – probably due to sea lice resistance (as has occurred with both Cypermethrin and Emamectin benzoate).



The dirty dozen farms using the most Deltamethrin (out of 914 cases in total) is dominated by Marine Harvest – with one of their sites in Loch Torridon (Camas an Leim) appearing four times! Loch Torridon is a well known hot-spot for sea lice infestation. Scientific research has shown that sea lice infestation from salmon farms in Loch Torridon is impacting on wild salmon and sea trout.

Site Name	Company	Month	Deltamethrin (g)
Snarraness Voe	Scottish Sea Farms Ltd	Aug-10	12740
Ardifuir	Lakeland Marine Farm Ltd	Dec-10	7500
Camas an Leim (Torridon)	Marine Harvest (Scotland) Ltd	Aug-11	385
Camas an Leim (Torridon)	Marine Harvest (Scotland) Ltd	Sep-11	332.5
Cairidh	Marine Harvest (Scotland) Ltd	Aug-10	230
Mid Loch Shell / Pairc - East (C & D cage groups)	Marine Harvest (Scotland) Ltd	Nov-11	229.5
Mid Loch Shell / Pairc - West (A & B cage groups)	Marine Harvest (Scotland) Ltd	Nov-11	210
Camas an Leim (Torridon)	Marine Harvest (Scotland) Ltd	Oct-11	210
Camas an Leim (Torridon)	Marine Harvest (Scotland) Ltd	Jun-11	210
Greshornish	Marine Harvest (Scotland) Ltd	Jan-11	206.25
Druimyeon Bay (New Site)	The Scottish Salmon Company Ltd	Nov-11	200
Maol Ban	Marine Harvest (Scotland) Ltd	Aug-11	198

Read in full via 'Dossier of Chemical Use on Scottish Salmon Farms 2008-2011'

Given the increase in the use of toxic chemicals and their persistent nature it is sadly not surprising that testing by SEPA has revealed chemical contamination of the seafloor under salmon farms. The latest SEPA survey published in 2011 detected Teflubenzuron in Loch Linnhe with Diflubenzuron detected in Loch Ewe and Loch Nevis. Another SEPA survey published in 2011 detected Teflubenzuron and Emamectin benzoate in all six areas sampled: Loch Kanaird, Summer Isles, Loch Fyne, Portree Bay, Loch Slapin and Loch na Keal.

Chemical contamination has also been detected in farmed salmon. In June 2012, the Veterinary Residues Committee reported: "One sample of salmon muscle contained a residue of emamectin at a concentration of 150 µg/kg. Officers from Marine Scotland have been asked to carry out a follow-up investigation and the results will be reported to a later meeting of the Committee." In July 2011, the Veterinary Medicines Directorate reported contamination of Scottish farmed salmon with a 'pesticide screen' which included PCBs, DDT and dieldrin. Testing by the Veterinary Residues Committee in 2005 also found Emamectin benzoate in four samples of farmed salmon (read FOI dossier online here). According to SEPA, farmed salmon will absorb 90% of Emamectin benzoate while 10% will be immediately excreted in the faeces (in the case of Teflubenzuron it is the converse with 90% excreted via faeces – hence the problem with contamination of sediments).

Sea lice problems in Scotland are reaching crisis levels. In 2010, the Sea Trout Group warned of a plague of 'super lice' resistant to chemicals. In 2011, the Salmon & Trout Association revealed alarming results of Government inspections of Scottish salmon farms including high levels of sea-lice. In June 2012, the Salmon & Trout Association reported that over 30% of salmon farms were breaching the industry's own sea-lice standards; and

chemical resistance was recorded at 17% of sites. In July, Rob Edwards reported via The Sunday Herald that Scottish salmon farmers are refusing to share sea lice data with the Government to avoid the damning information being released under Freedom of Information law.

In 2004, the Salmon Farm Protest Group first named and shamed the salmon farming companies using toxic chemicals at sites across Scotland including Special Areas of Conservation (protected under the EU Habitats Directive). However, the figures published by 'FishyLeaks' represent the first time site specific and company specific chemical use data has been accessed and made available to the public online.

Read all the data online via 'FishyLeaks' including: 'Dossier of Chemical Use on Scottish Salmon Farms 2008-2011'

Notes to Editors:

[1] Toxicity of Azamethiphos, Cypermethrin, Deltamethrin, Emamectin benzoate and Teflubenzuron:

Azamethiphos, Cypermethrin, Deltamethrin, Emamectin benzoate and Teflubenzuron are designed to kill sea lice (which are members of the crustacean family) but scientific papers also show lethal consequences for other crustaceans such as lobsters and shrimp.

Scientific research has shown that Azamethiphos and Cypermethrin are lethal to lobsters and Emamectin benzoate can induce premature moulting in lobsters. Deltamethrin is also lethal to both shrimp and lobsters.

"Pesticides killed my business" reported The Sunday Herald in 2011 following reports by SEPA of chemical contamination near salmon farms: "I'm convinced that the prawns were killed by the chemicals used by fish farmers to treat sea lice," said creel fisherman Donald Macleod. "There's hardly any prawns to be found in Loch Shell any more unless you go some distance from the salmon cages, he claims," continued The Sunday Herald. "And prawns aren't that different from the sea lice that the chemicals are designed to kill."

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'These chemicals destroyed my business'

DONALD Macleod knew he had a problem when he found dead prawns in the creels he used to catch live shellfish. Since then, his 20-year-old fishing business has collapsed and he has sold his boat. Two months ago, he left his native Isle of Lewis to try to make a new life in Wales.

Macleod, 43, used to fish prawns in Loch Shell on Lewis. But in 2009 he noticed that they were starting to die, and began asking questions.

Scientists from the Scottish Environment Protection Agency came to investigate, and detected traces of two fish-farming pesticides in the loch sediments. At Macleod's suggestion, they also took away some dead prawns to analyse.

Unfortunately, Sepa's Stornoway office was unable to analyse them, and it appears that they were thrown away.

"The worst thing is not knowing for sure, not being able to prove anything," Macleod says. "But I'm convinced that the prawns were killed by the chemicals used by fish farmers to treat sea lice."

There are hardly any prawns in Loch Shell now unless you go some distance from the salmon cages, he claims. Prawns are not that different from the sea lice that the chemicals are designed to kill.

"It has become obvious that fish farmers can do almost anything they want and no-one has the ability to deal with the mess they can create," Macleod says.

Read more via "Revealed: the toxic pesticides that pollute our lochs"

In Norway, official figures reveal that the use of Teflubenzuron and Azamethiphos in the Norwegian salmon farming industry sky-rocketed in 2009 due to sea lice resistance. In fact, chemical use (which also included use of Diflubenzuron) increased 34-fold between 2005 and 2011 (read online here).

Tabell 2. Midler mot lakselus (kg aktiv substans)

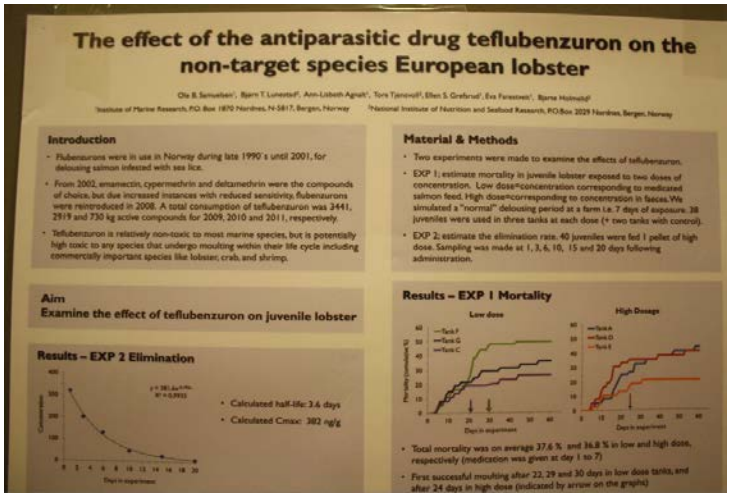
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
azametifos							66	1884[1)]	3346	2437
cypermetrin	62	59	55	45	49	30	32	88	107	48
deltametrin	23	16	17	16	23	29	39	62	61	54
diflubenzuron	-	-	-	-	-	-	-	1413	1839	704
emamektin	20	23	32	39	60	73	81	41	22	105
teflubenzuron	-	-	-	-	-	-	-	2028	1080	26
Totalt	**105**	**98**	**104**	**100**	**132**	**132**	**218**	**5516**	**6454**	**3374**
hydrogen-peroksid (tonn)								308	3071	3144[2)]

The use of Emamectin benzoate, Azamethiphos, Cypermethrn and Deltamethrin has raised concerns also in Canada with environmental groups campaigning to reduce chemical use on salmon farms (read more via "From sea to poisoned sea, Harper Government proposes new regulation that would facilitate toxic pesticide use on salmon farms").

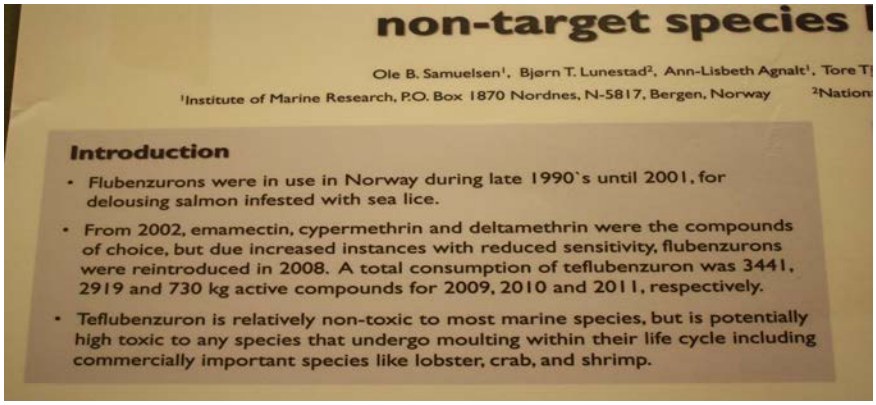
For more information on the toxic chemicals used on salmon farms read 'Silent Spring of the Sea' – more details online here

[2] Teflubenzuron is Lethal to Lobsters:

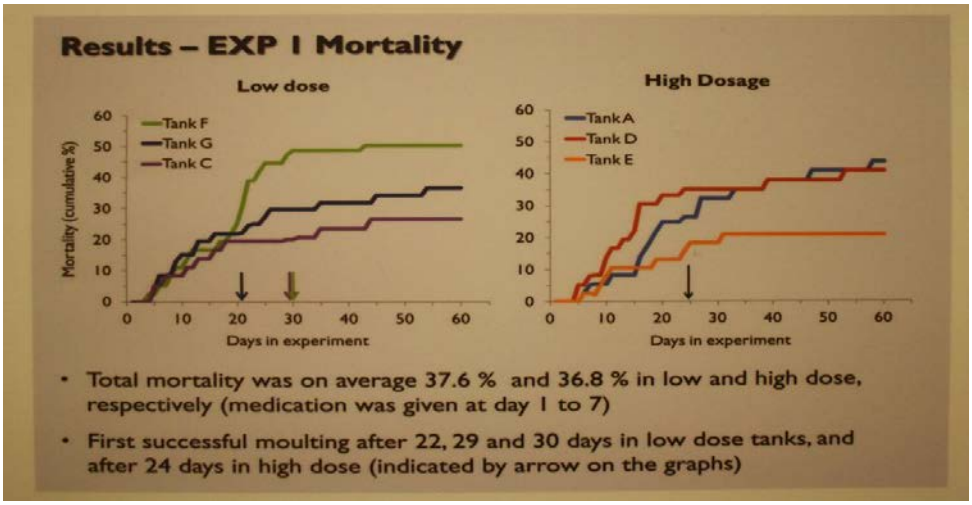
Scientific research presented at the Sea Lice 2012 conference in Norway in May revealed that Teflubenzuron killed lobsters.

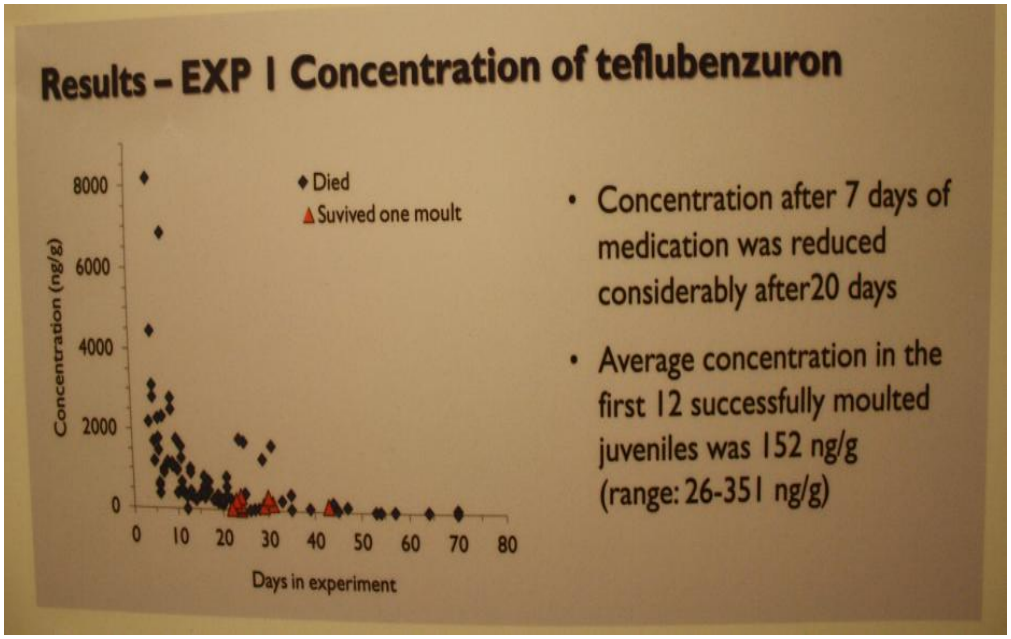


The research led by Dr .Ole Samuelsen at the Institute of Marine Research in Bergen showed that Teflubenzuron "is potentially high toxic to any species that undergo moulting within their life cycle including commercially important species like lobster, crab and shrimp."

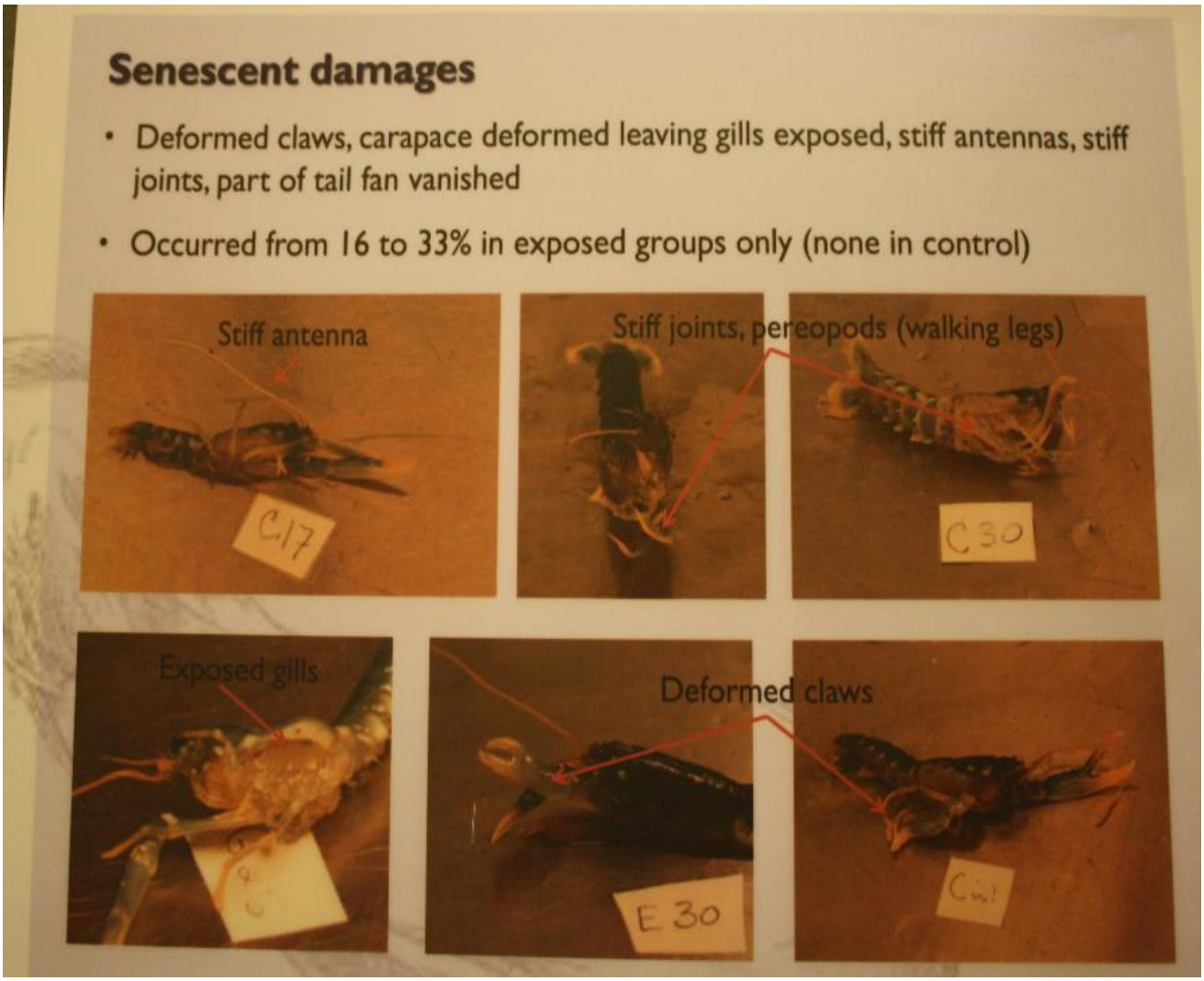


Teflubenzuron killed over a third of lobsters tested – at both high and low doses:

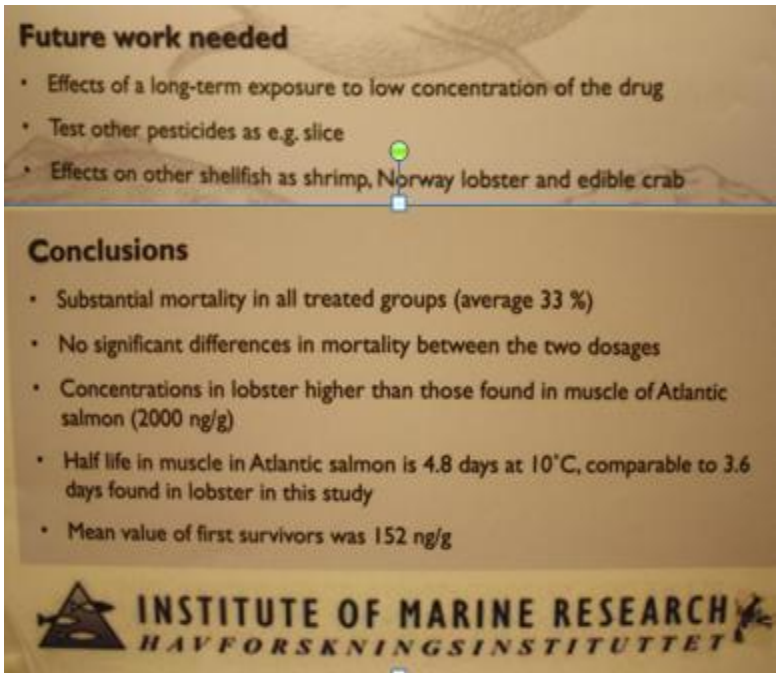




Teflubenzuron was so toxic it could premature ageing in lobsters including deformities in the claws and carapace with tail damage:



Further work is recommended to test the effects on other shellfish species such as shrimp and crab – and other chemicals such as SLICE (Emamectin benzoate):



Download the poster presentation in full online here

Further information is available (in Norwegian via): Samuelsen, Ole Bent, Arne Ervik og Frank Nilsen (2009): Bruk av flubenzuroner i lakseoppdrett: En evaluering.

The Green Warriors of Norway have warned about the use of Teflubenzuron since the 1990s. In Norway, there was a deal signed in 1999 by the salmon farmers and Norwegian Government pledging not to use Teflubenzuron (due to concerns that it was carcinogenic). However, in 2009 the Norwegian Minister of Fisheries (herself a salmon farm owner) broke the deal (read more details via a report from the Green Warriors of Norway – online here).

The use of Teflubenzuron in Scotland has also attracted controversy for over a decade. A critical review written by 'Deep Trout' in 2000 pointed out that: “the manufacturers state that teflubenzuron is: 1. Dangerous for the environment; 2. Very toxic to aquatic organisms; 3. May cause adverse long term effects in the environment” (read more via ‘Calicide - a critique of its proposed licence by SEPA as a sea lice control agent in salmonid aquaculture’).

The Sunday Herald also reported in 2001: “A controversial pesticide approved for use on 61 salmon farms in Scotland is classed as a highly toxic marine pollutant and can still be found in sediment on the sea bed nearly two years after use, according to documents revealed this week. The previously unpublished reports also reveal that the chemical teflubenzuron - administered to fish in a coating on their feed - is hugely inefficient, with as little as 5% being absorbed by the fish. The remaining 95% is excreted straight into the sea. Teflubenzuron, marketed under the name Calicide by aquaculture company Nutreco, was approved for use in 1998 by the Scottish Environment Protection Agency” (read more via “'Dynamite' report reveals fish pollution” and “Shellfish at risk from sea louse ‘cure’”).

A report – "Ecological effects of sea lice medicines in Scottish sea lochs" – published by the Scottish Association of Marine Science in 2005 stated that Teflubenzuron was "highly toxic to aquatic crustacean invertebrates". The project, however, was blocked by salmon farming companies who refused to co-operate with the scientific research. New Scientist reported in 2002 on "the possibility of a large-scale effect that may be related to the use of chemicals on the fish farms."

The Sunday Herald reported in 2007: "Salmon farmers are again using a toxic pesticide years after it was thought to have been phased out. The chemical, teflubenzuron, known commercially as Calicide, is given to salmon to kill sea lice parasites. A 1999 report by the Scottish Environment Protection Agency (Sepa) found teflubenzuron to be "potentially highly toxic to any species which undergo moulting within their life cycle. This will therefore include some commercially important marine animals such as lobster, crab, shrimp and some zooplankton species." Safety reports commissioned by the manufacturer, Nutreco, revealed Calicide can still be found in sediment on the sea bed nearly two years after use" (read more via "Toxic pesticide again in use on salmon farms").

[3] Increasing Use Despite Recommendation to Reduce Chemicals:

In 2006, the UK Government strangely stopped reporting chemical use to the OSPAR Commission: "OSPAR 2006 agreed that, for the time being, implementation reporting on PARCOM Recommendation 94/6 could cease for all Contracting Parties, but that if there were significant developments in the aquaculture industry in the future, the need for implementation reporting should be revisited".

As "lead countries" both Norway and the UK reported in 2005 the following use of toxic chemicals in 2005:

Table 6. Overview of the total amount of active components in veterinary medicinal products used as treatment of lice on salmon reported by the United Kingdom and Norway for 2005. Note: The symbols '0' and '-' are not explained in the national reports. It could mean 'no use' or 'not authorised' or 'no information'.

Active components in veterinary medicinal products used as treatment of lice on salmon	United Kingdom Tons/year	Norway Tons/year
Azametiphos 2000	< 0,1	0
Azametiphos 2002	0,045	0
Azametiphos 2003	0,033	0
Azametiphos 2004	0,007	0
Cypermetrin 2000	0,900	0,064
Cypermetrin 2002	0,220	0,062
Cypermetrin 2003	0,010	0,059
Cypermetrin 2004	0,037	0,055
Deltametrin 2000	0	0,020
Deltametrin 2002	-	0,023
Deltametrin 2003	-	0,016
Deltametrin 2004	-	0,017
Pyretrum	0	0
Diflubenzuron	0	0
Teflubenzuron 2000	0	0,039
Teflubenzuron 2002	0,072	0
Teflubenzuron 2003	0,036	0
Teflubenzuron 2004	0	0
Emamectin 2000	0	0,013
Emamectin 2002	0,015	0,020
Emamectin 2003	0,031	0,023
Emamectin 2004	0,052	0,032

The 2006 OSPAR report claimed: "In the UK and Norway there has been a decline in the use of medicinal products, even though the quantities of salmon produced have increased." The UK reported a reduction in the use of Azamethiphos, Cypermethrin and Teflubenzuron (with

no use of Deltamethrin at all) but an increase in the use of Emamectin benzoate on Scottish salmon farms:

Active substance in endo-/ectoparasiticidals for use in aquaculture	Amount used (t/a) 2002	Amount used (t/a) 2003	Amount used (t/a) 2004
Azametiphos	0,0459	0,0334	0,0073
Cypermetrin	0,2198	0,0103	0,0370
Deltametrin	Not authorised for use in UK	Not authorised for use in UK	Not authorised for use in UK
Pyretrum	Not authorised for use in UK	Not authorised for use in UK	Not authorised for use in UK
Diflubenzuron	Not authorised for use in UK	Not authorised for use in UK	Not authorised for use in UK
Teflubenzuron	0,0727	0,036	0
Emamectin	0,0154	0,0311	0,0521

Read more background via the 2006 OSPAR Commission 'Hazardous Substance Series' report: "Overview assessment: Implementation of PARCOM Recommendation 94/6 on Best Environmental Practice (BEP) for the Reduction of Inputs of Potentially Toxic Chemicals from Aquaculture Use" (download online here)

Whilst Norway publicly reports chemical use on Norwegian salmon farms (available online here), the UK or the Scottish Government does NOT publicly report chemical use on Scottish salmon farms.

A 2008 report published by WWF stated that: "Cypermethrin, a pyrethroid pesticide, is applied as a bath treatment in Norway, and the UK. Scotland treats with this compound relatively more often than elsewhere. The difference in rate of use (Kg/MT) is approximately 6 times greater than Norway." The data supplied by SEPA for 2003-2005 included:

UK

The following compounds are identified as having been used in anti-louse treatments in Scotland: *Bath treatments*: cypermethrin, deltamethrin, dichlorvos, azamethiphos and hydrogen peroxide. *In-feed additives*: diflubenzuron, teflubenzuron and emamectin benzoate. Table 4.3 shows the compounds actually used and the quantities applied from 2003 to 2005.

Table 4.3. Parasiticides used in Scotland and the quantities (Kg active ingredient) used 2003-2006. Source Scottish Environmental Protection Agency

Active Compound	2003	2004	2005	2006
Cypermethrin	10.5	656.9	6.6	9.7
Azamethiphos	35.5	11.65	0	0
Hydrogen Peroxide	35.3	43.8	19.7	0
Emamectin benzoate	28.3	52.6	36.3	16.8
Teflubenzuron	36.0	0	0	0

Read more via "Chemical use in salmon aquaculture: a review of current practices and possible environmental effects"

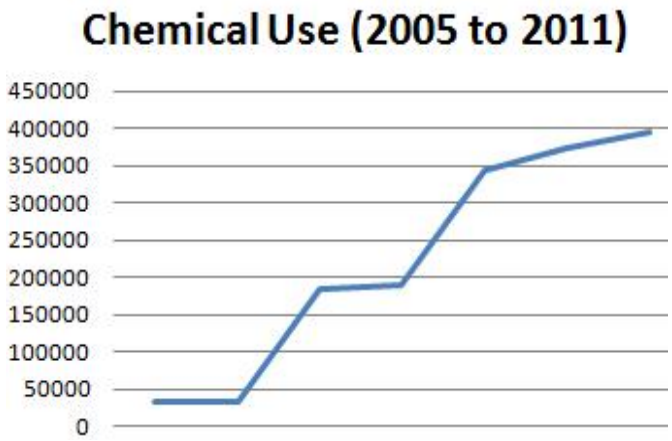
Whilst SEPA reported a significant decline from 2003 to 2006, the use of toxic chemicals has increased since 2006. In fact, a BBC Scotland investigation in 2011 – 'Salmon: A Dirty War' – revealed a "sharp increase" in the use of toxic chemicals on salmon farms but did not name companies or sites. "Scottish government figures showed that over the past five years, the industry used a broader range of chemicals and more of them," reported BBC News.

The BBC reported that the increased range of products was due to the introduction of the new medicine AMX, containing Deltamethrin in 2008 and the reintroduction of Salmosan, containing Azamethiphos, in 2007. STV News reported that: "The investigation shows the use of all veterinary chemicals has risen in the last five years, some by as much as 163%. Salmon production has increased by 11.3% since 2005, according to figures."

The chemical data obtained by BBC News was not published at the time but was recently shared with GAAIA. That information was obtained from Marine Scotland and is as follows:

PESTICIDE Trade Name (active ingredient)	2005 Amount Reported (kg)	2006 Amount Reported (kg)	2007 Amount Reported (kg)	2008 Amount Reported (kg)	2009 Amount Reported (kg)
Alpha Max (Deltamethrin)	0	0	0	0	13.2
Calicide (Teflubenzuron)	0	0	84.7	0	61.8
SLICE (Emamectim Benzoate)	28.6	22.1	61.8	63.5	51.8
EXCIS (Cypermethrin)	4.46	9.08	37.8	21.4	11.9
SALMOSAN (Azamethiphos)	0	0	0	100	203
TOTAL PRODUCTION (TONNES)	129,588	131,847	129,930	128,606	144,247

Based on the above data, total chemical use was 33060g in 2005; 31180g in 2006; 184300g in 2007; 184900g in 2008 and 341700g in 2009. Incorporating the data for 2005 to 2007 it can be seen that the use of toxic chemicals increased by a staggering 1094% from 2005 to 2011.



Read a letter to the OSPAR Commission – online here

[4] Loch Duart – the Toxic Salmon Company:

One of the biggest users of Teflubenzuron is Loch Duart – a company which markets itself as the 'Sustainable Salmon Company'. One of Loch Duart's clients claims that "they don't use any chemicals".

However, according to the data supplied by SEPA, Loch Duart was the fifth largest user of toxic chemicals in Scottish salmon farming using a total of 89350.988g in the period 2008-2011 – including 53490g of the organophosphate Azamethiphos; 23555.1g of the insecticide Teflubenzuron, 5949.538g of the pesticide Emamectin benzoate; 3565.5g of the lobster-killing Cypermethrin; and 2790.85g of the bath treatment Deltamethrin.

In the period 2008-2011, Loch Duart used toxic chemicals 282 times – including Deltamethrin (100 times), Cypermethrin (71 times), Azamethiphos (64 times), Emamectin benzoate (41 times) and Teflubenzuron (6 times). Read more via 'Loch Duart – The Toxic Salmon Company'

Data obtained from SEPA and presented by the Pure Salmon Campaign at the Salmon Aquaculture Dialogue meeting during the Seafood Summit in 2008 revealed that Loch Duart was one of the biggest users of both Cypermethrin and Emamectin benzoate:

Reported Excis (Cypermethrin) Use by Farmed Salmon Producers in Scotland in 2006

Company	Reported Excis Use (l)
Marine Harvest Scotland	559.6
Pan Fish Scotland Ltd	155.4
Fjord Seafood Scotland	125.2
Scottish Seafarms Ltd	81.7
Loch Duart Ltd	48.8
Drumbeg Salmon Ltd	41.8
Hoganess Salmon Ltd	13.6
Lakeland (Marine & Unst) Ltd	2
Lewis Salmon Ltd	0.6

Source: SEPA

Top 10 Reported Use of SLICE (emamectin benzoate) Per Tonne of Feed Used in 2006

Rank	Company	Site	Slice (kg)/ tonne feed used
1	NAFC	Lea of Trondra	1.067
2	Drumbeg Salmon Ltd	Loch Droighniche	415
3	Pan Fish Scotland Ltd	Mid Strome	395
4	Scottish Sea Farms (Main) Ltd	Allt a Chois, North Shore	385
5	Fjord Seafood Scotland	Vacasay	367
6	Drumbeg Salmon Ltd	Oldany Island	356
7	Loch Duart Ltd	Foindle East, Site 1	331
8	Loch Duart Ltd	Eilean a Mhadaidh, Site 2	322
9	Loch Duart Ltd	Calbha Beag, Site 5	286
10	Fjord Seafood Scotland	Kyles Vuia East	276

Source: SEPA

Read more via 'Gaining Transparency: Using the FOI process to track down data on the impacts of fish farming'

Another 2007 report from Pure Salmon Campaign detailed how Loch Duart was the #1 user of Cypermethrin per tonne of feed (a measure of production):

2005 Reported Excis Use Scottish Salmon/Fish Farms					
Rank (Absolute)	Company	Excis (litres) containing 1% cypermethrin	Excis Use - % of Scottish Total Use	Excis (l) Used/ tonne Feed Used	Excis Normalized Rank (g slice/kg feed)
1	Marine Harvest	205.6	31	0.005	5
2	Pan Fish Scotland Ltd	189.13	29	0.009	3
3	Scottish Sea Farms (Main,Shet)	108.66	16	0.004	6
4	Loch Duart Ltd	50.25	8	0.017	2
5	Drumbeg Salmon Ltd	49.16	7	0.024	1
6	Lakeland (Marine & Unst)	24.3	4	0.002	9
7	Fjord Seafood Scotland	20.8	3	0.003	8
8	Kames	7.4	1	0.007	4
9	Wester Ross	4.5	1	0.004	7
	TOTAL	660			

78 % of companies reported NO Excis use in 2005

The "Sustainable Salmon Company", Loch Duart (and its subsidiary Drumbeg Salmon), was the highest user of Excis per tonne of feed in 2005

Read more via 'Scottish Farmed Salmon Exposed'

Loch Duart is now seeking to expand into Eastern Canada where the illegal use of Cypermethrin caused a mass mortality of hundreds of lobsters. Following a raid by dozens of armed officers in flak jackets Cooke Aquaculture is scheduled to appear in court in January 2013 with three executives charged with 11 counts of violating the Fisheries Act carrying up to 99 years in prison.

[5] Chemical Contamination Under Scottish Lochs:

For more information from SEPA read the following survey reports: "The Occurrence of Chemicals used in Sea Lice Treatments In Sediments Adjacent to Marine Fish Farms"

Results of Screening Surveys During 2009 (459k)
Results of Screening Surveys During 2008 (557k)
Results of Screening Surveys During 2006 (260k)

Results of Screening Surveys During 2005 (597k)
Results of Screening Surveys During 2004 (124k)
Results of Screening Surveys During 2003 (191k)

Available online via SEPA's web-site

Based on the information above, the Sunday Herald detailed "The Lochs Contaminated by Pesticides" in 2011:

Loch Linnhe, Fort William: teflubenzuron and emamectin
Loch Ewe, Poolewe: diflubenzuron and emamectin
Loch Nevis, near Mallaig: diflubenzuron and emamectin
Loch Kanaird, near Ullapool: teflubenzuron, diflubenzuron and emamectin
Summer Isles, Achiltibuie: teflubenzuron, diflubenzuron and emamectin
Loch Fyne. Lochgilphead: emamectin
Portree Bay, Skye: teflubenzuron and emamectin
Loch Slapin, Skye: teflubenzuron and emamectin
Loch na Keal, Mull: teflubenzuron and emamectin

Read more details via "Revealed: the toxic pesticides that pollute our lochs" and "Beauty-spot Lochs Contaminated by Toxic Chemicals"

Further information obtained from SEPA by the Salmon & Trout Association in 2012 via Freedom of Information revealed:

• The failure of fish-farmers to report to SEPA self-monitored data concerning sea-lice chemical residues in the sea-bed of Scottish sea lochs: SEPA recorded approximately 16% of fish-farms as failing to supply Slice residue data between 2005 and 2010 in accordance with regulations
• Sea-lice chemical residues in excess of Environmental Quality Standards: Approximately 13% of fish-farms reported self-monitored samples to SEPA of sea-bed residues in excess of EQS between 2005 and 2010
• A reduction in audit or 'check' monitoring of sea-bed residues of sea-lice chemicals by SEPA, despite its role as Scotland's environmental regulator

Hughie Campbell Adamson, Chairman of S&TA Scotland, told BBC News: "The information from SEPA raises serious concerns over the impact of in-feed sea lice treatments. While the control of sea lice on fish-farms is essential, it would not be environmentally responsible to threaten marine shellfish populations as a consequence."

Read more via "Salmon & Trout Association exposes sea-bed pollution of Scottish sea-lochs"

Find out which companies failed to provide chemical data and details on illegal chemical use via the "Reported sea lice treatment chemical residues in Scottish sea lochs"

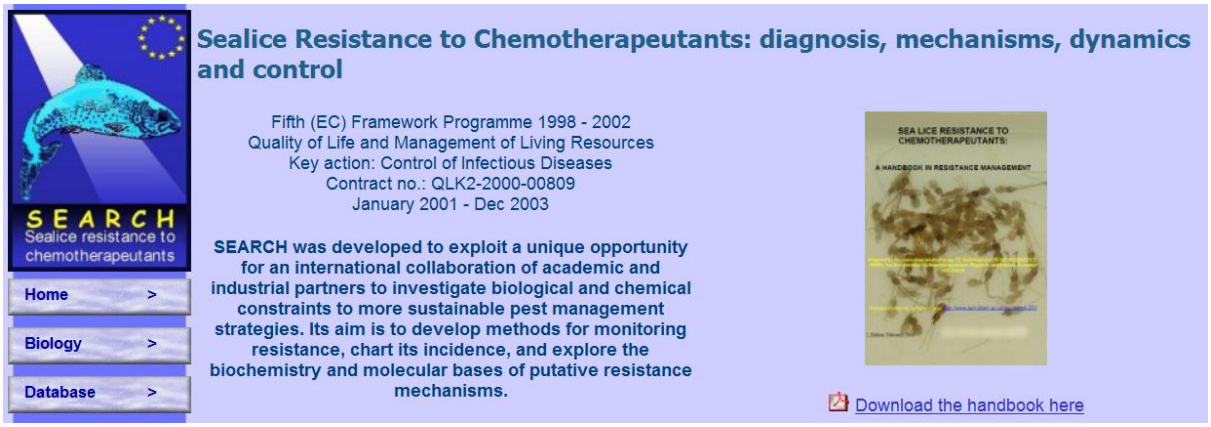
In August 2012, the Scottish Wildlife Trust reported that Scottish Natural Heritage has also expressed concern that chemical use could spread to the nearby Firth of Lorn Special Area of Conservation, protected under EU law because of the rarity of its reefs.

Read more via "Will wildlife have to pay the price for salmon farming?"

[6] Chemical Resistance Creates a Plague of 'Super-Lice':

Resistance to chemicals has been reported since the 1980s when sea lice developed resistance to the organophoshate Dichlorvos and salmon farmers responded by developing more lethal weapons in the 'war on sea lice' (read more via 'Silent Spring of the Sea'). A chemicals 'arms race' has been waged ever since as salmon farmers fight a losing battle against their nemesis – the sea louse (read more via 'Sea Lice – A Never-Ending Battle').

A European-Union funded project – 'Sea Lice Resistance to Chemotherapeutants' – addressed the issue producing a 'Handbook to Resistance Management' in 2006. "Resistance in the parasite *Lepeophtheirus salmonis* is known to exist, and may become a serious threat to European aquaculture," warned the report. "The over-riding principle for resistance management can be summarised neatly as 'variety is the spice'. Rather than relying solely on any single product for pest control, farmers should be encouraged to exploit the maximum diversity of control measures available" (read online here).



Scientific papers reported sea lice resistance to Azamethiphos in 2004, Deltamethrin and Cypermethrin in 2005 and Emamectin benzoate in 2008. Professor Tor Horsberg of the Norwegian School of Veterinary Science told the Sea Lice 2010 conference: "The signs are very clear in Norway, in Scotland and Ireland and on the East Coast of Canada pointing in one direction -- and that's the increasing tolerance of parasites to SLICE [Emamectin benzoate]."

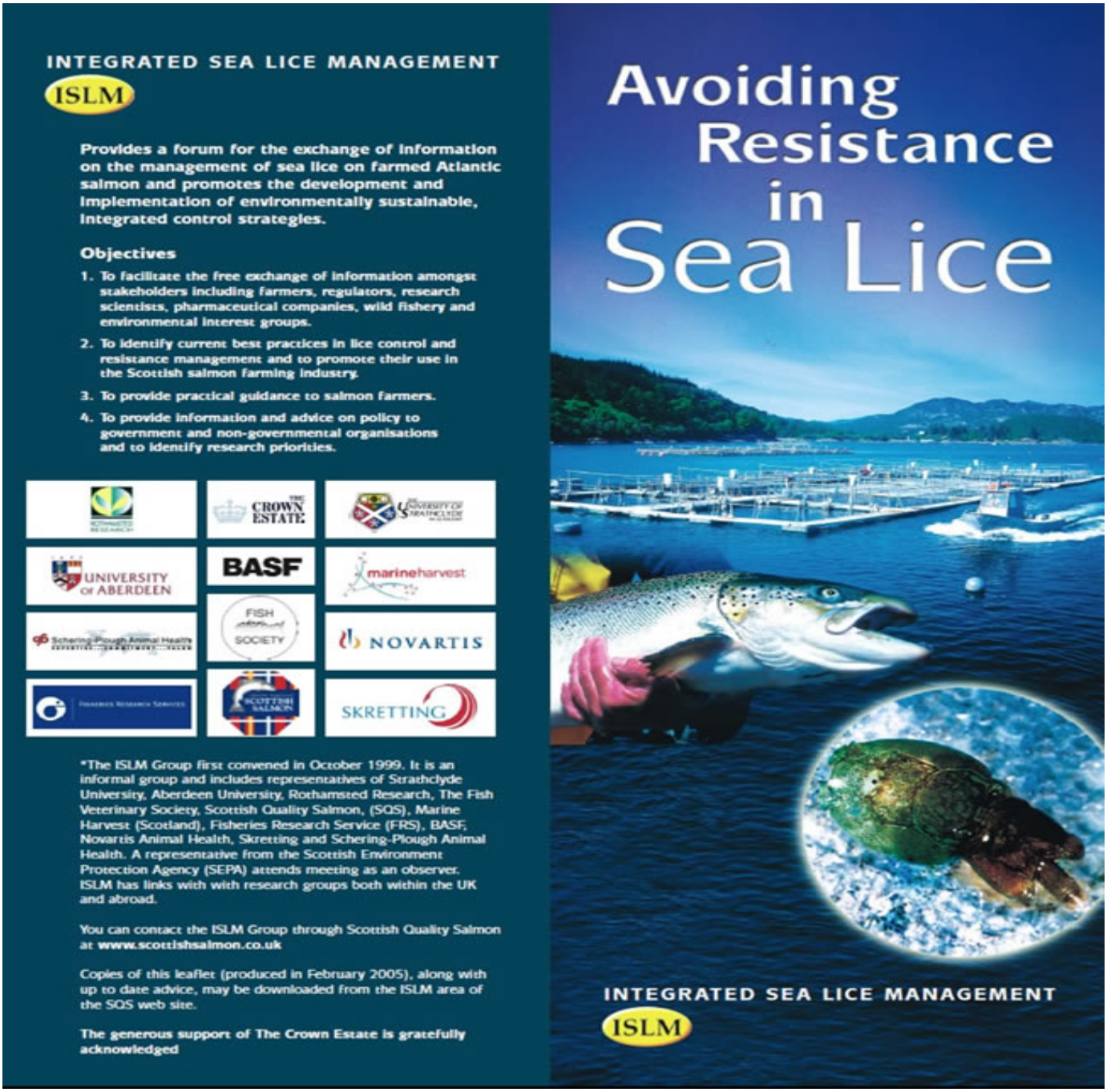
The Norwegian Institute for Public Health reported in 2010: "Increasing resistance to sea lice treatment has led to the reintroduction of many older drugs that have not been used for many years. Last year, increased resistance to sea lice treatments such as the pyrethroids cypermethrin and deltamethrin, as well as emamectine, was observed. Pyrethroid use still increased from 2008 to 2009, although use of emamectine reduced significantly. Older sea lice treatments are being used again due to resistance problems, e.g. azametiphos, diflubenzuron and teflubenzuron."

The Scottish Salmon Producers' Organisation still has published on their web-site the following 2005 leaflet from their 'Code of Good Practice for Scottish Finfish Aquaculture':

ANNEX 12 Integrated Sea Lice Management (ISLM)

The Integrated Sea Lice Management Group, which was formed in 1999, has produced the leaflet 'Avoiding Resistance in Sea Lice' (2005). The leaflet sets out the principles of

integrated sea lice management. There are currently plans to revise and update the leaflet (which is now out of print). It remains one of the most succinct summaries of the integrated sea lice management approach, and is reproduced here in full.



INTEGRATED SEA LICE MANAGEMENT

ISLM

Provides a forum for the exchange of information on the management of sea lice on farmed Atlantic salmon and promotes the development and implementation of environmentally sustainable, integrated control strategies.

Objectives

1. To facilitate the free exchange of information amongst stakeholders including farmers, regulators, research scientists, pharmaceutical companies, wild fishery and environmental interest groups.
2. To identify current best practices in lice control and resistance management and to promote their use in the Scottish salmon farming industry.
3. To provide practical guidance to salmon farmers.
4. To provide information and advice on policy to government and non-governmental organisations and to identify research priorities.

*The ISLM Group first convened in October 1999. It is an informal group and includes representatives of Strathclyde University, Aberdeen University, Rothamsted Research, The Fish Veterinary Society, Scottish Quality Salmon, (SQS), Marine Harvest (Scotland), Fisheries Research Service (FRS), BASF, Novartis Animal Health, Skretting and Schering-Plough Animal Health. A representative from the Scottish Environment Protection Agency (SEPA) attends meeting as an observer. ISLM has links with with research groups both within the UK and abroad.

You can contact the ISLM Group through Scottish Quality Salmon at **www.scottishsalmon.co.uk**

Copies of this leaflet (produced in February 2005), along with up to date advice, may be downloaded from the ISLM area of the SQS web site.

The generous support of The Crown Estate is gratefully acknowledged

Avoiding Resistance in Sea Lice

INTEGRATED SEA LICE MANAGEMENT

ISLM

Resistance

Development of resistance to veterinary medicines is a consequence of selection pressure. Medicines select those lice that are naturally resistant by killing susceptible individuals and allowing resistant lice to survive and reproduce. This changes the balance in the population and as resistant lice become predominant the medicine loses efficacy.

The rate at which resistance develops is determined by the biology and ecology of the lice, the medicine's persistence and specificity and the intensity of its use, which includes dose rate and the number and timing of applications.

Lice developed resistance to dichlorvos in the late 1980s in Scotland, so their ability to adapt under selection pressure is already proven (reviewed by Denholm et al, 2002). The purpose of this advice is to delay the development of resistance to the current active ingredients for as long as possible. It will therefore concentrate on describing the current best management practices and promote the minimal use of medicines consistent with the maintenance of high standards of fish welfare.

Resistance monitoring

At present there is no official requirement for anyone to carry out resistance monitoring. However any Suspected Adverse Drug Event (SADE) to any medicine that occurs should be reported to the Veterinary Medicines Directorate (VMD). This includes observations about lack of efficacy, which may be due to the development of resistance.

Norwegian researchers have developed rapid sensitivity assay methods for treatments as part of an EU funded project, details can be found at the following web site, **http://www.rothamsted.bbsrc.ac.uk/pie/search-EU/Index.php** .

If lack of efficacy to a product is suspected, then fish farmers should take steps to determine whether resistance is the reason.

Management Practices

Single Year Classes

Single year classes and an all-in all-out policy should be used where possible. The Final Report of the Joint Government/Industry Working Group on Infectious Salmon Anaemia (2000) defined 'a single year class' and reference to the report should be made in the event that clarification is required.

Fallowing

Fallow periods are standard husbandry practice and are important as a management technique to control sea lice.

A fallow period is defined as a time when there are no fish stocked on the farm. During this time pens may be refurbished and nets cleaned and disinfected or renewed. The length of fallow periods varies but the Fisheries Research Service recommends a minimum fallow period of six weeks. Research carried out by Revie et al (2004) shows that prolonged fallow periods (greater than 6 weeks) have no effect on the subsequent settlement rates of lice on the newly stocked fish.

Monitoring of lice

Farmers should monitor lice numbers regularly starting soon after the fish are delivered to sea. They should conform to a standard protocol such as that described by Treasurer and Grant (1997), and follow advice produced by the Tripartite Working Group (TWG). Guidelines on current best practice may be found on the Scottish Quality Salmon (SQS) website.

Routine removal of moribund fish

Sick fish tend to hang around the corners of the pens and should be removed daily and humanely dispatched not only for welfare reasons, but also because they harbour sea lice.

Regular removal of mortalities

Dead fish should be removed daily as a matter of routine. *Post mortem* examination will indicate whether sea lice were implicated as a cause of death.

Net cleanliness

Nets should be cleaned/changed regularly as it is generally accepted that dirty nets impede the free flow of water and that lice numbers are lower where nets are kept clean.

Grading/Grilse removal

Grilse tend to stop feeding as they mature and therefore can harbour lice during and after an in-feed treatment. Efficient grading and removal of grilse is therefore important.

Achieving healthy lice-free salmon

Other Approaches

Medicines

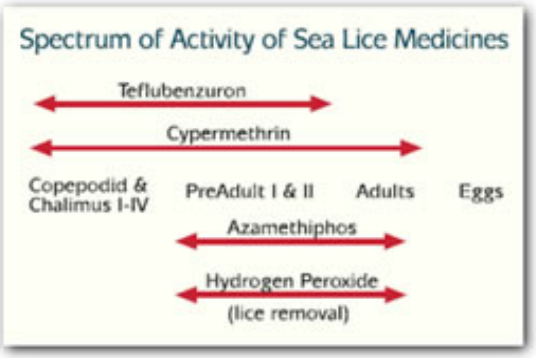
Even the best managed farms may need to use medicines from time to time. Where required, farmers should apply to SEPA for Discharge Consents (DCs) for each of the medicines authorised for use against sea lice so that they will be able to take full advantage of the advice contained in this document.

Medicine Types

The authorised medicines are all classified as Prescription Only Medicines (POM) and must be prescribed by a veterinary surgeon for use on animals 'under his care'. The following medicines are authorised in the UK. Full details may be found in product data sheets or from the manufacturer. A detailed description of available medicines is given by Grant (2002). While all of the below have current Marketing Authorisations in the UK, availability may vary

Salmosan, (Novartis Animal Vaccines Ltd) contains azamethiphos an organophosphate. Its mode of action is by inhibiting acetylcholinesterase activity in cholinergic nervous systems.

Excis, (Novartis Animal Vaccines Ltd) contains cypermethrin a synthetic pyrethroid. The mode of action is by interference with sodium channels in nerve membranes.



Medicines *cont.*

Slice, (Schering-Plough Animal Health) contains emamectin benzoate a macrocyclic lactone. The target for this compound's action is the gamma-aminobutyric acid (GABA) receptor in the peripheral nervous system.

Calicide, (Skretting) contains teflubenzuron, a benzoyl urea, which is a chitin synthesis inhibitor that interferes with the formation of the cuticle and prevents the larval stages from moulting, and thereby stops their further development.

Salmosan and Excis are topical treatments while Slice and Calicide are incorporated in feed. Thus when available there are four different types of medicine and these must be used prudently to preserve sensitivity of sea lice to each of the active ingredients. Marketing Authorisations for products containing hydrogen peroxide have lapsed and these have been lost to the industry.

Biological Control

Wrasse

The use of wrasse as an aid to control is well documented (Sayer, Treasurer and Costello 1996). Scotland has a smaller population of wrasse than Norway and the technology for keeping wrasse alive in pens is not well developed. It should be noted that although the use of wrasse might be viewed as sustainable and environmentally friendly, fish welfare advocates are against this practice on the grounds that wrasse tend to die off in salmon pens after about six months or when water temperature declines and they cannot satisfy their need to over winter.

If wrasse are to be used they should be from local, sustainably fished stocks and their welfare should be safeguarded by protecting them from predator attack and by the provision of appropriate refuges.

Future technology

Semiochemicals (behaviour modifying chemicals) that sea lice use to find their hosts, have been identified. These are currently being put into traps designed for both copepodid and adult sea lice to be used as devices for monitoring prior to or after treatments. This will aid timing and the measurement of effectiveness of treatments.

Diagnosis and Decision Making

Farmers should monitor lice numbers according to the standard method.

In consultation with their veterinarian, farmers should consider whether there is any information about resistance in lice from the previous cycle before deciding which medicine to use. As lice sensitivity tests become available it may be prudent to use them routinely.

When treating fish, reliance on a single product is discouraged. The ideal would be to use a different chemical class of product on different generations of salmon but this is not always possible and rotation of actives is advised. It may be that other factors will have a bearing on choice such as the amount of medicine permitted by SEPA in some Discharge Consents. This may define what medicines can be used on the farm at certain times (for example in some circumstances it may only be possible to use particular medicines when fish are very small).

Farmers should try to treat all the fish on a farm at the same time or at least in as short a time span as possible to limit re-infestation.

The simultaneous use of different active ingredients may lead to the development of resistance to both compounds and is to be discouraged.

Predicting the need for treatments

There is good information about the development times of each stage of sea lice at different temperatures, and this can be used to develop predictive treatment regimens.

What to avoid

Farmers should try to avoid carrying out consecutive treatments with the same active ingredient and certainly not on the same cohort of sea lice. A cohort of sea lice is defined as a set of juveniles resulting from a distinct adult population.

National Treatment Strategy

The SQS National Treatment Strategy for the Control of Sea Lice (NTS) was adopted as a Code of Practice in 1998. It promotes the concept of strategically timed coordinated treatment of sea lice in the late winter. This has been shown to have a beneficial effect on subsequent lice control in management areas. The detailed operation of such a strategy may be tailored to local conditions by a Local Area Management Group.

Recent findings about the timing of the coordinated treatments in Scotland show that if farms are cleared of lice in December, with follow-up treatments given in January/February, this regimen gives the best gains in control and treatment reduction later on in the cycle.

Area Management Agreements

Management Agreements (MAs) exist between farmers and Area Management Agreements (AMAs) have been signed with wild fisheries under the Tripartite Working Group initiative. Farmers are encouraged to develop their treatment strategies in consultation with others.

References

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Read [online here]

More details via "[Plague of 'Super-Lice' Threatens Wild Salmon]" and "[Resistant sea lice threatening wild salmon stocks along the Norwegian coastline]"

[7] Breach of Sea Lice Levels by Scottish Salmon Farmers:

The Salmon & Trout Association reported in March 2011:

• 68 instances of fish-farms recorded as having sea-lice levels above the thresholds recommended in the industry's own Code of Good Practice during the period for which records were inspected;
• 52 instances of fish-farms recorded as having other sea-lice related issues, such as damage or mortality caused by sea-lice, or high lice loads on sampled fish;
• 48 instances of fish-farms reported as not recording farm sea-lice numbers in accordance with industry standards;
21 instances concerning evidence of a lack of efficacy of, or tolerance to, or potential resistance to available sea-lice treatments, including unexpectedly low sea-lice clearance rates using licensed treatments and failure to control sea-lice numbers

Read more via "Salmon & Trout Association exposes sham of salmon farming industry claims"

Read the dossier detailing which farms have breached sea lice levels – online here

[8] Scotland's Sea Lice Crisis:

Hughie Campbell-Adamson, Chairman of S&TA Scotland, said in June 2012: "Contrary to all the bland assurances the salmon farmers' trade body, the SSPO, give to conservation bodies, to Marine Scotland and to the supermarkets which buy their fish, the information obtained by S&TA shows that sea-lice are not controlled on over 30% of salmon farms and control with chemicals is becoming more difficult. This is not good news for wild fish.

Read more via "Sea-lice parasite numbers above industry's own 'threshold' level at over 30% of Scottish salmon farms inspected in second half of 2011"

Even the industry's own figures published via the Scottish Salmon Producers' Organisation's 'Regional Health Management Reports' make ugly reading.

For example, the report for West Shetland region (December 2011 to February 2012) included: "lice numbers across the West Shetland region were, on average, 253% above the suggested lice treatment threshold set out in the NTS and CoGP (*i.e.* 1.0 adult female lice per fish). During February, when the suggested lice treatment threshold is considerably lower (*i.e.* 0.5 adult female lice per fish), lice numbers were, on average, 584% above the suggested lice treatment threshold." For the period March-May 2012, in West Shetland region: "lice numbers across the West Shetland region were, on average, 80% above the suggested lice treatment threshold set out in the NTS and CoGP (*i.e.* 0.5 adult female lice per fish)."

In East Shetland region: "During February [2012], when the suggested lice treatment threshold is considerably lower (*i.e.* 0.5 adult female lice per fish), lice numbers were, on average, 236% above the suggested lice treatment threshold". For the period March-May 2012, in the East Shetland region: "lice numbers across the East Shetland region were, on average, 222% above the suggested lice treatment threshold set out in the NTS and CoGP (*i.e.* 0.5 adult female lice per fish)."

In South Mainland region: “During December 2011 and January 2012, lice numbers across the South Mainland region were, on average, 4% above the suggested lice treatment threshold set out in the NTS and CoGP (*i.e.* 1.0 adult female lice per fish). During February, when the suggested lice treatment threshold is considerably lower (*i.e.* 0.5 adult female lice per fish), lice numbers were, on average, 106% above the suggested lice treatment threshold.” For the period March-May 2012: “lice numbers across the South Mainland region were, on average, 79% above the suggested lice treatment threshold set out in the NTS and CoGP (*i.e.* 0.5 adult female lice per fish).”

In North Mainland region: “During December 2011 and January 2012, lice numbers across the North Mainland region, on average, were 151% above the suggested lice treatment threshold set out in the NTS and CoGP (*i.e.* 1.0 adult female lice per fish). During February, when the suggested lice treatment threshold is considerably lower (*i.e.* 0.5 adult female lice per fish), lice numbers were, on average, 94% above the suggested lice treatment threshold.” For the period March-May 2012: “lice numbers across the North Mainland region were, on average, 152% above the suggested lice treatment threshold set out in the NTS and CoGP (*i.e.* 0.5 adult female lice per fish).”

[9] Secret Scotland:

The Sunday Herald reported in July 2012: “Salmon companies are refusing to send vital data to Scottish Government scientists, to avoid it being released under Freedom of Information law. On the few occasions they have had to forward information, it has been deleted by government officials. The information is about one of the biggest problems plaguing salmon farmers – infestations of sea lice.”

Rob Edwards reported further: “In one email, Norwegian-owned Marine Harvest said that releasing the information “could result in misrepresentation of the facts which would of course be damaging to our commercial interests as a company.”

Read more via “Keeping salmon farming problems secret” and “Salmon firms 'hiding damning reports'”

A Parliamentary Written answer in July 2012 also confirmed that it was Scottish Government policy to delete sea lice data:

SCOTTISH PARLIAMENT: WRITTEN ANSWER

19 July 2012

Graeme Pearson (South Scotland) (Scottish Labour): To ask the Scottish Government for what reason Marine Scotland Science has deleted data on sea lice levels at salmon farms.
(S4W-08527)

Mr Stewart Stevenson (Scotland's Minister of Environment):
Under The Fish Farming Businesses (Record Keeping)(Scotland) Order 2008, Schedule 1, Part 2) Marine Scotland Science can require that sea lice records be submitted for scrutiny. Where compliance has been demonstrated, that record will either be returned to the company in question, or deleted, with a note appended to the case that the company has demonstrated compliance with the legislation in question.

[10] Chemical Contamination of Scottish Farmed Salmon:

In June 2012, the UK's Veterinary Residues Committee reported contamination of Scottish farmed salmon with Emamectin – prompting an investigation by Marine Scotland:

VRC/12/17v2

VETERINARY RESIDUES COMMITTEE: JUNE 2012

NATIONAL STATUTORY SURVEILLANCE SCHEME FOR VETERINARY RESIDUES IN ANIMALS AND ANIMAL PRODUCTS: 2012

Members are asked to:

i) Note the results of the 2012 surveillance programme since the last meeting, in particular the following:

One sample of salmon muscle contained a residue of **emamectin** at a concentration of 150 µg/kg.

FISH
Avermectins
Salmon
One sample of salmon muscle contained a residue of **emamectin** at a concentration of 150 µg/kg. Officers from Marine Scotland have been asked to carry out a follow-up investigation and the results will be reported to a later meeting of the Committee.

APPENDIX 2

NATIONAL SURVEILLANCE SCHEME 2012 - RESULTS OF FOLLOW-UP INVESTIGATIONS: 18 MAY 2012

Follow-up investigation results received since the last meeting are in bold text.

Species & Matrix	Residue detected & concentration (RIM Ref)	Products used	Actives	Cause of residue
Fish				
Salmon Muscle	Emamectin 150 µg/kg (1209487)			Awaiting investigation results

Online via: http://www.vmd.defra.gov.uk/VRC/pdf/papers/2012/vrc1217.pdf

The VRC also reported in their 2005 'Annual Report on Surveillance for Veterinary Residues in Food':

Emamectin residues were detected in 4 of 175 salmon muscle samples tested (2.29%). These were at concentrations of between 110 and 120 µg/kg. It was found that the samples were of fish that were not ready for market, so the residues were not of health concern for consumers.

Online via:
http://collections.europarchive.org/tna/20100907111047/vmd.gov.uk/vrc/reports/vrcar2005.pdf

GAAIA filed a FOI request in August with Marine Scotland and the Veterinary Medicines Directorate. On 3 September, Marine Scotland provided a 149 page dossier of information on Emamectin contamination of Scottish farmed salmon since 2005 including cases involving Marine Harvest, Scottish Sea Farms, Skelda Salmon and the Scottish Salmon Company.

In 2005, following a site visit to Marine Harvest's salmon farm at Shell in the Western Isles, Emamectin contamination was reported by the Veterinary Medicines Directorate:

Case No.: **20050872** Date of Visit: **06 July 2005**

Business No.: **FB0119** Site No.:**FS0108**

Business Name: **Marine Harvest (Scotland) Ltd** Site Name: **Shell**

Veterinary Medicines Directorate
National Surveillance Scheme for Residues in Fish
Primary sample

Directive 96/23/EC
Sample Ref. No. (RIM NO) 0508471

To FRS Please collect in June
the following sample and send to Laboratory of the Government Chemist
Place of sampling Any Suitable Farm

Sample type	Species type
Muscle	Salmon Any

For use by Collecting Officer only
Please record full details of sample: Please use black ink and BLOCK letters

Cage/Pen Number	Name of Site	Site Number (FS Number)	Company (FB Number)
66	SHELL	0108	0119

Important: If sample cannot be taken, give reasons and return top two copies to the Veterinary medicines Directorate, Woodham Lane, New Haw, Addlestone, Surrey, KT15 3LS. Tel: 01932 336911 ext. 8328

Remarks: UM00060341 OC

Name of collecting officer in BLOCK letters please YVONNE MCMURCHIE
Date of collection 06/07/05 Date of despatch to Lab. 12/7/5
0508471

For Laboratory use ONLY
Date of receipt: 13/7/05 OC Sample condition:

'Test for'	Screening		Confirmatory	
1. Ivermectin	-ve			
	Name	Date	Name	Date
	NLOGS	19/9/05		
2. Emamectin	+ve		+ve 110µg/kg	
	Name	Date	Name	Date
	NLOGS	19/9/05	NLOGS	19/9/05

Commercial in Confidence

LGC
Setting standards in analytical science

ANALYTICAL RESULTS:

Sample Number	Description	Test	Confirmed Result ng/kg
V0508471	**Salmon muscle**	**Emamectin $1B_a$**	**110**

REPORT DATE: **19 September 2005**

Report prepared by:

[redacted]

Anna Pålsson
Veterinary Residues Team, LGC

Report authorised by:

[redacted]

Selina Teixeira
Veterinary Residues Team, LGC

In June 2006, the Scottish Government's Fisheries Research Services laboratory reported Emamectin contamination in four samples of farmed salmon sourced from a site in the Sound of Hoy in Orkney operated by the Norwegian-owned Scottish Sea Farms:

FISHERIES RESEARCH SERVICES

To:	[redacted]	From:	Sonia Morrice
Address:	Scottish Sea Farms, Shetland	Tel:	01224 295635
Country:		Our Ref:	AH-FF-061-042-007
Fax No:	01595 860309	Date:	27 June 2006
Copy To: (And Fax No)		No of Pages:	3

Message:

Dea[redacted]

As requested, attached is a copy of the Certificate of Analysis for the Emamectin samples from Sound of Hoy.

Regards

[redacted]

Sound of Hope
650691

Commercial in Confidence

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Setting standards
In analytical science

Certificate of Analysis

Report number: FA20/06/28

CUSTOMER: **Veterinary Medicines Directorate**
Woodham Lane, New Haw, Addlestone, Surrey, KT15 3NB

SAMPLE DETAILS AND RESULTS:

VMD Sample Reference (RIM Form Number)	Sample Type	LGC LIMS Number
0518169	Salmon muscle	V0518169
0518170	Salmon muscle	V0518170
0518171	Salmon muscle	V0518171
0518172	Salmon muscle	V0518172

ANALYSIS REQUIRED:

Emamectin B1a

METHOD(S) USED:

LGC Method Screen - VMD/C1-2015 Confirmation - VMD/C1-3015

Duplicate samples were extracted with acetonitrile. Extracts were cleaned up by alumina chromatography followed by solid phase extraction using C18 cartridges. Samples were dried at 50°C under nitrogen and re-suspended in 1ml of acetonitrile.

Samples were quantified against the spiked matrix curve. Analytical recovery is determined by comparing the slope of this curve and that of matrix-matched standards (post-extraction spikes).

The detection capability (CCβ) was calculated as 120 µg/kg in salmon muscle on the day of analysis.

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Setting standards
In analytical science

ANALYTICAL RESULTS:

Sample Number	Description	Test	Confirmed Result ug/kg
V0518169	**Salmon muscle**	**Emamectin $B1_a$**	**120**
V0518170	**Salmon muscle**	**Emamectin $B1_a$**	**110**
V0518171	**Salmon muscle**	**Emamectin $B1_a$**	**100**
V0518172	**Salmon muscle**	**Emamectin $B1_a$**	**110**

REPORT DATE: **2 March 2006**

Report prepared by:

[redacted]

Deborah Hart
Veterinary Residues Team, LGC

Date: 2 March 2006

Report authorised by:

[redacted]

Selina Teixeira
Veterinary Residues Team, LGC

Date: 2 March 2006

AM-F-061-042-007

Sonia Morrice

From: Sonia Morrice
Sent: 09 March 2006 16:25
To: Maggie Green (Maggie Green)
Subject: Emamectin in salmon

Hi Maggie

I received the paperwork for the emamectin positives from Steph. All four related to the same site - Hoy A, belonging to Scottish Sea Farms. I have checked our case record for the visit. Mike Bland visited on the 3rd November and checked the medicines records. It is noted on the case sheet that a Slice treatment had been administered in July. I have spoken to the site contact who has confirmed that the site was treated for Slice in July (8-14th) and again in October (22 - 29th). I suspect that the latest treatment had not been entered in the treatment record (otherwise Mike would have noted it) - however we can not be certain. It is now in the record, a copy of which is to be faxed to me. The fish are still on site - harvesting has not started yet but is due to start in April.

I plan to send the results out by post. Please let me know if you wish us to take any further action.

> From: Green, Maggie
> Sent: 07 March 2006 12:59
> To: Hunt, Stephanie
> Cc: Rubidge, Janet
> Subject: RE: Salmon emamectin
>
> Steph,
>
> Slice which contains emamectin has a zero withdrawal period. I
> suspect these fish were not going to be harvested immediately. We
> need to remind FRS to check the medicines records before sampling so
> they don't sample fish that have just been treated. Hopefully now we
> have 'avermectins' on the RIM forms instead of 'ivermectin' this type
> of problem will not occur in future.
>
> However, there was some intelligence about a year to 18 months ago
> that farmers were using products containing this active that aren't
> authorised in the UK . Can you speak to or e-mail FRS about the
> possibility of illegal medicines being used i.e. did the sampling
> officer check the medicine records? The results would suggest that
> they didn't as otherwise they would know emamectin had been used
> rather than ivermectin. Ideally we need to know what product was used and when the fish were slaughtered.

From: Green, Maggie [mailto:m.green@vmd.defra.gsi.gov.uk]
Sent: 27 March 2006 11:41
To: 'Sonia Morrice'
Cc: Rubidge, Janet; [redacted] Crutcher, Eric
Subject: RE: Emamectin in salmon

Sonia,

Thanks for the information on when the sampling was carried out in relation to the treatment with SLICE. If the residue was in excess of the MRL in the fish on 3 November then a nil withdrawal period would appear to be inadequate. I am copying in our colleagues in our Suspect Adverse Reaction Scheme and also our licensing Branch. Can you confirm that it was SLICE being used and not an imported generic treatment. I know that FRS inspectors had previously found an emamectin treatment from China on one site.

Regards,

Maggie

-----Original Message-----
From: Sonia Morrice [mailto:S.Morrice@marlab.ac.uk]
Sent: 21 March 2006 08:00
To: 'Green, Maggie'
Subject: RE: Emamectin in salmon

Hi Maggie

Thanks for the clarification. Maybe we're cynical up here but if I was using an illegal lice treatment I might try to cover it up by using a legal one as well!

Further incidents of Emamectin contamination were reported in 2009 – including one case at double the Maximum Residue Limit (MRL) at a site in Sian Bay in Setter Voe in Shetland operated by Skelda Salmon:

FORM B

DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS
SCOTTISH EXECUTIVE ENVIRONMENT AND RURAL AFFAIRS DEPARTMENT,
NATIONAL ASSEMBLY FOR WALES AGRICULTURE DEPARTMENT

THE FOOD SAFETY ACT 1990
THE ANIMALS AND ANIMAL PRODUCTS (EXAMINATION FOR RESIDUES AND MAXIMUM RESIDUE LIMITS) REGULATIONS 1997 (AS AMENDED)

(Regulation 16)
REFERENCE ANALYSIS CERTIFICATE

To.....

of.....

Reference analysis of the official sample described below has confirmed that it contains a residue of:

d) an authorised substance at a concentration exceeding the relevant maximum residue limit.

as indicated in box 10 overleaf.

Signature of analyst [redacted].....Date: 24 June 2009

Analyst at LGC
An approved laboratory for the purposes of the Regulations.

Name (in block letters) LOUISE CLIFFORD

Official address Queens Road, Teddington, Middlesex, TW11 0LY

1. Sample Reference No.	0909538
2. Sample type and amount	Muscle, not known
3. Date of collection	14 05 09
4. Method of collection	Not known
5. Species and sex	Salmon, not known
6. Age (months) approx.	Not known
7. Tested for	Avermectins
8. Relevant Maximum residue limit (if applicable)	100 µg/kg
9. Primary analysis result	Positive Emamectin
10. Reference analysis result	210 µg/kg
11. Laboratory Ref. No.	V0909538

In 2010, the Veterinary Medicines Directorate reported two cases of Emamectin contamination at Lakeland Marine's farm at Bagh Dail Nan Cean:

VMD ref VMD11310A Marine Scotland Science ref. case 20100361

Report for Veterinary Medicines Directorate (VMD) – follow up investigation following positive samples attained on a fish farm site for emamectin benzoate (active ingredient of SLICE)

Introduction

In reference to positive samples being attained for emamectin benzoate above the Maximum Residue Limit (MRL) (sample ref's 0927638 and 0927639) at the site known as Bagh Dail Nan Cean (Marine Scotland ref. FS0805) a follow-up investigation on site was conducted on the 8th of February 2010. The following is a brief report on the investigation's findings -

Report

Inspectors present – Daniel J Pendrey and Andrew S Mayes
Company representative for Lakeland Marine Farm Ltd (Marine Scotland ref. FB0349) – Iain Webster

The positive samples were attained from Atlantic salmon (*Salmo salar*) in cages three and six. The inspectors were informed that these cages had not been harvested or moved since the positive samples had been taken. The fish on site should all be harvested by late summer 2010.

Medicine records were being kept and maintained correctly. The marketing authorisations in place for SLICE were PMF 01310050 and PMF 01310051 as recorded in the treatment record. A SLICE treatment was recorded as having been administered between the 13th of November 2009 and the 19th of November 2009. All cages on site were recorded as having been treated during these dates and at that time the fish were approximately 3Kg average weight and had been input to the site late in 2008.

The substance was administered as an in-feed treatment and the Veterinary Instruction (VI) was available for the treatment. However, the VI for the site appeared to have been supplemented by a proportion of the VI allocation for another of the company's sites known as Ardmaddy PMF ref. 01310050.

The treatment was reportedly administered within the seven day period for which SLICE is to be given. The medicated feed was reportedly stored in feed hoppers and stored correctly.

Additional information

The inspectors present were informed that due to fish health issues on site the original plan to feed the fish with SLICE was put back. As a consequence the company made a decision to transfer some of the VI treatment allocation from another site. Based on the numbers on site and the average weights it was estimated by the inspectors that the biomass on site at the time of treatment was below the biomass against which the VI was given.

In summary, it appears there has been a miscalculation by the company with regard to the biomass to be treated. Therefore, a higher dosage of active ingredient was administered with the likely result being the substance tested for being above the MRL.

DJP and ASM 18th February 2010

[redacted]

In April 2012, the VMD reported another case of Emamectin contamination at a site in Lamlash Bay on the Isle of Arran operated by the Scottish Salmon Company:

From: Brailsford, Carol [c.brailsford@vmd.defra.gsi.gov.uk]
Sent: 27 April 2012 10:32
To: Duguid S (Sonia) (MARLAB)
Cc: Russell, Sandra; Hunt, Stephanie
Subject: FW: Confirmed positive - 1209487
Attachments: 1209487 [S12-004656].pdf

Hi Sonia,
A copy of the paperwork for a salmon sample found to non-compliant for emamectin 150 ug/kg, is attached.
Please could you arrange for a follow-up inspection to take place as soon as possible.
Thanks
Carol

Carol Brailsford | Residues Surveillance | Veterinary Medicines Directorate
Direct Dial: +44 (0)1932 338330 | **Fax:** +44 (0)1932 336618 | **E-mail:** c.brailsford@vmd.defra.gsi.gov.uk
www.vmd.gov.uk

fera
The Food and Environment Research Agency

ANALYTICAL RESULTS:

Sample Number	Description	Emamectin - Screen result (µg/kg)	Confirmed Result (µg/kg)
S12-004656	Salmon, Muscle & skin	Positive	150

REPORT DATE: 26 April 2012

Veterinary Medicines Directorate
National Surveillance Scheme for Residues in Fish
Primary sample

Directive 96/23/EC
Sample Ref. No. (RIM NO) 1209487

To FRS — Please collect in Any Month
the following sample and send to FERA, Room 50G30, Sand Hutton, York, YO41 1LZ
Place of sampling Any Suitable Farm

Sample type	Species type
Muscle & Skin	Salmon Any

For use by Collecting Officer only
Please record full details of sample: Please use black ink and BLOCK letters

Cage/Pen Number	Name of Site	Site Number (FS Number)	Company (FB Number)
10	Lamlash	0423	0169

Important: If sample cannot be taken, give reasons and return top two copies to the Veterinary medicines Directorate, Woodham Lane, New Haw, Addlestone, Surrey, KT15 3LS. Tel: 01932 336911 ext. 8328

Remarks: Potential withdrawal for muscle.

Name of collecting officer in BLOCK letters please: D. TOMLINSON
Date of collection: 27-3-12. Date of despatch to Lab: 3/4/12
1209487

For Laboratory use ONLY

'Test for'	Screening		Confirmatory	
1. Avermectins	Name	Date	Name	Date
	AS12-004656-003 Sample type: Salmon Muscle & Skin Aliquot Type:			
2.	Name	Date	Name	Date

A follow up investigation by Marine Scotland included:

marine scotland science

The Scottish Government

VMD investigation – follow up of positive for Emamectin – Lamlash, 16/05/2012

Following notification from VMD that a muscle sample taken at the Scottish Salmon Company (FB0169) site Lamlash (FS0423) was over the maximum residue limit (MRL) for Emamectin an investigation was conducted to determine the cause. The salmon muscle sample (RIM 1209487) was taken by Marine Scotland Science (MSS) Fish Health Inspector David Tomlinson, at Lamlash on 27 March 2012. The sample was processed by the Food and Environment Research Agency (FERA) and found to have a residue level of 150µg/kg of Emamectin, therefore being above the MRL.

On 16 May 2012 an unannounced inspection was conducted at the Lamlash site by MSS Fish Health Inspectors Sonia Duguid and David Tomlinson. 125,000 Atlantic salmon of an average weight of 3.5kg were on site at the time of the investigation.

Medicine records were checked for the site and all requirements of the Veterinary Medicines Regulations in respect of administration of medicines were maintained. Two treatments of Slice had been administered over the last few months – the first was administered between 19-25 December 2011 and the second between 19-25 March 2012. The second treatment finished only two days prior to the positive sample being taken. Veterinary instructions were inspected for both treatments and found to be present and correct. Both veterinary instructions stated a 'zero withdrawal'. Two Alphamax treatments had also taken place on site this year – on 13 February 2012 and 8 May 2012. Although the official withdrawal for the slice treatments was zero, the company has customers in the USA and therefore has a company policy of a 60 day (not degree day) withdrawal for Slice. Under the company policy withdrawal, the site was under withdrawal at the time the sample was taken, and in fact still at the time of the investigation. It was clear from both the records and the farm software which cages were under the company imposed withdrawal.

It is my opinion that the most likely cause of the sample testing above the MRL is due to the difficulties involved in treating aquaculture animals in general. There is always a natural variation in fish weight in populations, which makes calculation of biomass problematic and therefore the administration of an exact dose of medicine impossible. There will also be variations in appetite between fish in a cage, making it extremely difficult to administer an exact dose of an oral medicine. It was recommended that the company submit a suspect adverse reaction report.

[redacted]

Sonia Duguid
1 June 2012

Read the dossier in full online here

In July 2011, the Veterinary Medicines Directorate also reported contamination of farmed salmon for a ‘Pesticide Screen’:

NATIONAL SURVEILLANCE SCHEME FOR RESIDUES IN FARMED FISH
RESULTS OF TARGETED SAMPLING IN GREAT BRITAIN: 1 JANUARY 2011 - 4 JUNE 2011

Compound/Substance	Species	Age & Sex	Matrix	No. of Analyses	No. above Action Level	Concentration detected where samples above the MRL or at/above the MRPL /Action Level (µg/kg)
■ B3a Pesticide Screen	Salmon		Muscle	2	1	3.5
	Trout		Muscle	5	1	2.4

Online via: http://www.vmd.defra.gov.uk/pdf/mavis/mavis79.pdf

The VMD subsequently confirmed this contamination was of Scottish farmed salmon and related to various pesticides including PCBs, DDT and dieldrin:

From: Greener, Dawn [mailto:d.greener@vmd.defra.gsi.gov.uk]
Sent: 06 August 2012 13:28
To: Don Staniford

The salmon was from Scotland and the pesticide screen covers the following:

Aldrin
DDE, pp'-
DDT, pp'-
Dieldrin
Endosulfan sulfate
Endosulfan-Alpha
Endosulfan-Beta
gamma-HCH (HCH, Lindane)
HCB (Hexachlorbenzene)
HCH-Alpha
HCH-Beta
PCB 101
PCB 118
PCB 138
PCB 153
PCB 180
PCB 28
PCB 52

[11] Marine Harvest's £80 Million Bribe

In May 2012, the First Minister of Scotland visited Marine Harvest's head office in Bergen, Norway, accepting £80 million in investment from the Norwegian-owned Marine Harvest.

"I was pleased to hear first hand about Marine Harvest's plans for their operations in Scotland and delighted by their latest investment commitment that will benefit local communities. Clearly they are set to play a key role in our ambitions for growth in the industry, including our aim of increasing production by 50 per cent on 2009 levels to 210,000 tonnes by 2020," said the First Minister of Scotland in a press release issued by the Scottish Government (16 May).

"We are committed to farming in Scotland, where the results show that top quality salmon is in demand increasingly around the world. With people eating more salmon and the need to sustainably increase our production, we believe that further investment in Scotland is good for our business and the Scottish economy, the communities where we operate and our consumers. Because of this we are looking at investment plans for Scotland in the region of £80 million between 2012 and 2016 that could create around 100 jobs," said Ole-Eirik Leroy, Chairman of the Marine Harvest Board in the same press release which appeared to be a joint statement from the Scottish Government and the Norwegian multinational. Here's a photo of the May 2012 meeting:

First Minister in Norway

First Minister breakfast meeting with Alan Sutherland, MD of Marine Harvest Scotland, Ole Eirik Leroy, Chairman of Marine Harvest Corps and Jane Owen, UK Ambassador to Norway.

Watch a video report on the trip online here – including the First Minister of Scotland describing Norwegian-owned salmon farms as “the essence of Scotland”.

In April 2012, The Sunday Herald reported: “Foreign multinational Marine Harvest has been accused of offering "bribes" to the islanders of Colonsay to get them to agree to a controversial plan to turn their waters into a giant fish farm**.** The Norwegian firm has promised the 120 residents of Colonsay, to the north of Islay, £50,000 up front and £10,000 a year thereafter if they vote for 12 salmon cages to be moored 1500 metres off their east coast.” Read more via “Fish firm offers island £50,000 'bribe' for salmon farm site” Marine Harvest were so happy SEPA fast-tracked their applications to use Deltamethrin, for example, that they offered SEPA staff farmed salmon as a reward. The Sunday Herald reported in 2009:

“Marine Harvest suggested sending “some sides of smoked salmon” to staff at the Scottish Environment Protection Agency (Sepa) after they processed applications to dose salmon

cages with deltamethrin in a matter of days. The suggestion was unethical and should never have been made, the Oslo-based company said. It promised it would be sparing Sepa any embarrassment by sending the agency "an unconditional apology". Last year salmon farmers were anxious to be allowed to use deltamethrin to treat sea lice, which eat fish alive. Previous pesticides were becoming ineffectual, as the lice were beginning to resist them."

Read more via "Company says sorry for offering environment officials free salmon"

In 2004, Marine Harvest also presented the First Minister of Scotland with a pair of gold salmon cuff-links (the First Minister's brother was a manager at a Marine Harvest farm at the time).

In August 2012, GAAIA filed a FOI request asking the Scottish Government to provide all information on dialogue, correspondence, letters, meetings, gifts and any other dealings with Marine Harvest.

GAAIA also wrote a letter today to the First Minister of Scotland asking him why the Scottish Government was pressing ahead to increased salmon farming production by 50% by 2020 even though problems with sea lice infestation and chemical resistance were increasing (read letter online here).

[12] Delay in the Publication of 'Scotland's Aquaculture Database':

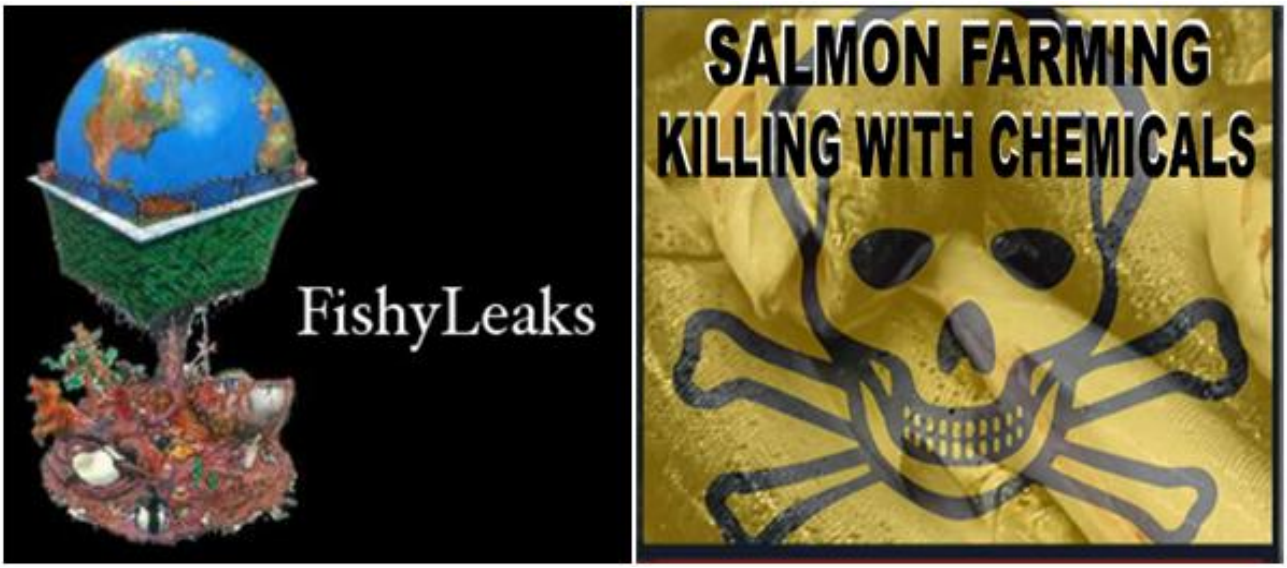
A leaked report reveals that the Scottish Government is preparing a public relations offensive to clean up the poor image of Scotland's foreign-owned salmon farming industry. According to the Marine Strategy Forum report (dated June 2012), 'Scotland's Aquaculture Database' was originally scheduled for launch by SEPA on 30 July. Read more via "Scotland's Secrets Exposed!: Leaked Report Reveals 'Data Cleansing' of Diseased Salmon Farming"

However, following FOI requests by GAAIA to SEPA and Marine Scotland the launch date has been delayed. Read SEPA's letters providing more details and requesting extra time until 20 September - online here and online here

The Scottish Government told GAAIA on 31 July: "Scotland's Aquaculture website is currently under development. Provisional plans to launch the website at the end of July have had to be revised. We intend to have a launch date confirmed as soon as possible and will endeavour to keep you up to date on progress."

The Scottish Government's Paul Haddon of the Aquaculture Unit told GAAIA on 15 August: "I refer to your revised request under the Freedom of Information (Scotland) Act 2002 (FOISA) for correspondence and any information relating to 'Scotland's Aquaculture Database' including reference to "data cleansing" Under section 10(1) of FOISA. Our response to your request was due on 14 August 2012. Unfortunately, it will take longer than expected to deal with your request because Jillian - who was dealing with the request - has been unexpectedly away from the office this week. I apologise for this delay and hope to be able to send you a response shortly. I apologise for the delay and will endeavour to keep you updated on handling of this response. The position on the Aquaculture website remains the same in that it is still under development and we hope to have a launch date confirmed as soon as possible. We will certainly keep you up to date on progress but I haven't got any further information on it at the moment."

To be continued.....



Read all the data online via 'FishyLeaks' including: 'Dossier of Chemical Use on Scottish Salmon Farms 2008-2011'

Contact: Don Staniford: dstaniford@gaaia.org and salmonfarmingkills@gmail.com