



# STATEMENT

LERØY QUALITY DEPARTMENT

To whom it may concern

Bergen, Norway 21.06.2013

## Information regarding environmental pollutants in salmon

Last week the Norwegian newspaper VG had an article on environmental pollutants in salmon. It recommended that young women and pregnant not to eat more than one meal of fatty fish, like salmon a week because of the levels of dioxins and dioxin like PCBs in fatty fish.

As a consequence of the debate in the media last week, the Norwegian Directorate of Health issued a more specified dietary advice recommending young and pregnant women not to eat more than *two meals of fatty fish, such as salmon per week*.

The specification is based on the previous report: "A comprehensive assessment of fish and other seafood in the Norwegian diet" published in Norwegian in 2006 by the Norwegian Scientific Committee for Food Safety (VKM) (published in English in 2007). The dietary advice on fatty fish in the report reads: "Those who eat more than two meals of fatty fish per week over a long period of time may moderately exceed the tolerable intake (TWI) for dioxins and dioxin-like PCBs, but this would initially only represent a reduced safety margin. Fertile women are particularly vulnerable...". The advice was based on analyses of pollutants found in fatty fish, like salmon up until 2004. At this time the sum of dioxins and dioxin-like PCBs was three times higher than at present. Hence the statement that those who eat more than two meals of fatty fish per week over a long period of time may moderately exceed the tolerable intake is obsolete.

Today the total levels of dioxins and dioxin-like PCBs is about a third of what it was when the report was published mainly due to the increased inclusion of vegetable ingredients in salmon feed in recent years. Consequently it is no longer correct that two meals of salmon per week can moderately exceed the tolerable intake of these pollutants.

Lerøy analysis from 2012 show that the Lerøy salmon contain 0,49 pg/g of dioxins and dioxin like PCBs. A salmon meal of 200 gram will therefore contribute with 98 pg TU dioxin and dioxin like PCBs (TU = Total units). The maximum tolerable weekly intake (TWI) for a person of 70 kg is 980 pg TU per week (set by EU). In other words, a person can eat 10 salmon meals in a week and not exceed the TWI.

It is very unfortunate if people stop eating farmed salmon or other fatty fish like mackerel and herring due to one-sided focus on the undesirable contaminants in fish. The health benefits of eating farmed fish twice a week exceeds the negative effects (Source: <http://www.vkm.no/dav/d94dff429b.pdf> ). It is therefore more detrimental to public health if people stop eating seafood and farmed salmon.

The dietary advice by the Directorate of Health to limit the consumption of fatty fish is particularly directed at young and pregnant women. The most recent data on seafood consumption by Norwegian women indicate that on average they eat less than 100 grams of fatty fish per week. Young women eat even less than that. Consequently the statement by the Directorate of Health may result in the section of the population that eats the least fish, and need it the most, further reducing their consumption of this food category. Numerous research reports internationally show that seafood, including fatty fish like salmon provides important nutrients like marine omega-3, vitamin D, iodine and selenium for pregnant women and the unborn child.

Despite the higher levels of pollutants in farmed fish in 2004 compared to current levels, the VKM report already in 2006 highlighted that pregnant- and nursing women would have considerable health benefits from increasing their consumption of fatty fish "(...) due to the probable beneficial effects on fetal development, including the development of brain function." The most recent data which show considerably lower levels of pollutants in fatty



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fish should make Norwegian health authorities even more confident that pregnant women should eat more fatty fish.

NIFES (National institute of nutrition and seafood research) survey the level of substances in Norwegian fish at a regular basis. All analysis are available at their website;  
[http://www.nifes.no/index.php?page\\_id=137&lang\\_id=2](http://www.nifes.no/index.php?page_id=137&lang_id=2)

The table below from NIFES show levels and decrease of environmental pollutants in Norwegian salmon. The reason of the decrease is that the level of marine ingredients has decreased and the level of vegetables ingredients has increased in salmon feed. Marine ingredients are the main source for environmental pollutants.

## Dioxin like PCB and PCB

| Species                                            | Year | Location    | Dioxin-like PCBs (non-orto og mono-orto PCBs) (ng TEQ/kg.) |                  | PCBs (PCB 7) (µg/kg) |                 |
|----------------------------------------------------|------|-------------|------------------------------------------------------------|------------------|----------------------|-----------------|
|                                                    |      |             | Num.                                                       | Mean. (Range)    | Num.                 | Mean. (Range)   |
| Atlantic salmon - farmed<br>( <i>Salmo salar</i> ) | 2012 |             | 98                                                         | 0.29 (0.12-0.47) | 98                   | 4.5 (2.3-8.5)   |
|                                                    | 2011 | Aquaculture | 99                                                         | 0.5 (0.2-1.3)    | 99                   | 6.5 (2.9-16.0)  |
|                                                    | 2011 | Aquaculture | 140 *(1)                                                   | 0.5 (0.2-0.7)    | 280 *(2)             | 5.1 (1.2-11.6)  |
|                                                    | 2010 | Aquaculture | 183 *(3)                                                   | 0.7 (0.4-1.2)    | 32 *(4)              | 10.6 (5.9-21.1) |
|                                                    | 2010 |             | 33                                                         | 0.75 (0.42-1.23) | 33                   | 10.4 (5.9-21)   |
|                                                    | 2009 |             |                                                            |                  |                      |                 |
|                                                    | 2009 |             | 270 *(5)                                                   | 0.6 (0.3-1.0)    | 270 *(6)             | 7.8 (3.6-17.7)  |
|                                                    | 2009 |             | 49                                                         | 0.7 (0.1-1.1)    | 50                   | 7.9 (3.1-15)    |
|                                                    | 2008 |             | 430 *(7)                                                   | 0.7 (0.3-1.7)    | 435 *(8)             | 6.7 (2.1-15.5)  |
|                                                    | 2008 |             |                                                            |                  | 51                   | 11 (4.9-28)     |
|                                                    | 2007 |             | 580 *(9)                                                   | 0.9 (0.6-2.0)    | 580 *(10)            | 8.5 (3.0-18.4)  |
|                                                    | 2007 |             | 39                                                         | 0.95 (0.52-1.5)  | 31                   | 13 (1.4-20)     |
|                                                    | 2006 |             | 125 *(11)                                                  | 1.2 (0.6-1.5)    | 120 *(12)            | 8.9 (4.8-13.6)  |
|                                                    | 2006 |             |                                                            |                  | 34                   | 11 (2-23)       |
|                                                    | 2005 |             | 155 *(13)                                                  | 1.0 (0.3-1.8)    | 80 *(14)             | 8.5 (0.5-19.3)  |
|                                                    | 2005 |             | 44                                                         | 1.2 (0.7-2.2)    | 44                   | 11 (6-16)       |
|                                                    | 2004 |             | 40 *(15)                                                   | 0.8 (0.6-1.2)    | 180 *(16)            | 9.2 (2.3-22.7)  |
|                                                    | 2004 |             | 12                                                         | 1.2 (0.91-1.7)   | 12                   | 12 (8.1-17)     |
|                                                    | 2003 |             |                                                            |                  | 180 *(17)            | 10.0 (3.0-18.5) |
|                                                    | 2003 |             |                                                            |                  | 25                   | 10              |
| 2002                                               |      |             |                                                            | 160 *(18)        | 8.3 (2.4-15.9)       |                 |
| 2002                                               |      |             |                                                            | 45               | 11                   |                 |
| 2001                                               |      |             |                                                            | 45               | 15                   |                 |
| 1998                                               |      |             |                                                            | 18               | 26                   |                 |
| 1995                                               |      |             |                                                            | 45               | 17                   |                 |

Source: NIFES; [http://www.nifes.no/index.php?page\\_id=&article\\_id=4258&lang\\_id=2](http://www.nifes.no/index.php?page_id=&article_id=4258&lang_id=2)

Best regards

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