



## Attachment 3 – Description of service

We would like to get measured mercury, methylmercury, selenium and different stable mercury isotopes in samples of different tissues/organs of Atlantic bluefin tuna *Thunnus thynnus*. Data is going to be used in a scientific setup and QA/QC needs to be accordingly (see below). Furthermore, we need to be allowed to publish the detailed method description together with these data in a scientific journal.

Brain: 1      Heart: 7      Gill: 6      Liver: 9      Spleen: 9      Kidney: 4      Bile: 7  
Intestine: 9      Pyloric Cecum: 7      Stomach: 9      Gonad: 9      Fatty muscle: 9  
Lean muscle: 14

→**Sum: 100 samples**

We are providing wet and homogenized samples and the methods should be able to handle wet samples, as not all samples can be freeze-dried.

### **Mercury speciation**

Minimum requirement:

A detailed description of the method to measure mercury and methylmercury in the samples has to be provided.

The laboratory has to provide all QA/QC data from measurements of certified reference materials (CRM) from at least each instrument run and results from running the blank samples. In total, at least 8 CRM measurements are required. The measurement uncertainty should not exceed 15 %. The LOQ should be 0.01 mg/kg or lower.

A simultaneous measurement method of total Hg and MeHg would be preferred, as the MeHg fraction is of special interest. However, if the methods for total Hg and MeHg are showing a sufficient resolution based on certified reference materials resulting in a correct ratio of MeHg to total Hg (MeHg lower than total Hg), separate measurements of total Hg and MeHg can be acceptable.

### **Total selenium**

Minimum requirement:

A detailed description of the method to measure total selenium in the samples has to be provided.

The laboratory has to provide all QA/QC data from measurements of certified reference materials (CRM) from at least each instrument run and results from running the blank samples. In total at least 8 CRM measurements are required. The measurement uncertainty should not exceed 15 %. The LOQ should be 0.01 mg/kg or lower.

A simultaneous measurement of total Hg and Se would be preferred (ICP).

### **Mercury isotopic composition**

Stable mercury isotopes should be measured using multi-collector ICP-MS (MC-ICP-MS). The aim is to be able to study the Hg isotopic composition including mass-dependent and mass-independent fractionation. Typically,  $^{199}\text{Hg}$ ,  $^{201}\text{Hg}$  and  $^{202}\text{Hg}$  and  $^{198/200}\text{Hg}$  are reported. Hg isotope composition is



expressed in  $\delta$  notation and reported in permil (‰). It has to be accounted for instrumental mass discrimination and an explanation should be given how this was done.

Recoveries and mercury isotope ratio data measured in certified reference materials (CRM) and/or secondary materials have to be included for QA/QC. At least three different CRMs / secondary materials should be used, relevant to the sample matrices analyzed in this study (eg TORT – 3, BCR CRM 464, NRC-CNRC DORM – 4, IAEA 436) adding up to at least 25 measurements.

The method should be able to analyze samples containing down to 0.1 mg /kg wet weight. However down to 0.05 mg/kg wet weight would be preferable.

#### Delivery time:

Describe estimated delivery time from received samples to all data / results are made available for IMR.