J.R. Simplot Company
Simplot Headquarters
1099 W. Front Street
Boise, Idaho 83702
P.O. Box 27
Boise, Idaho 83707

July 14, 2021

SENT VIA EMAIL TO: paula.wilson@deq.idaho.gov

Ms. Paula Wilson
Idaho Department of Environmental Quality
1410 North Hilton
Boise, ID 83706

Dear Ms. Wilson:

The Department of Environmental Quality (Department), as a part of the negotiated rulemaking for revising the arsenic human health water quality criteria has published a preliminary draft rule. The J.R. Simplot Company (Simplot) has a number of business interests throughout the State of Idaho that are subject to the arsenic human health water quality criteria. Thus, these criteria will have direct impact on water discharges or remedial actions that involve Simplot.

Simplot has been extensively involved in this negotiated rulemaking, including attending the rulemaking meetings, providing comments and working with the Idaho Association of Commerce and Industry on comments throughout this rulemaking.

The Department has asked for comments in regard to options for the criteria for two beneficial uses:

- Recreation (fish consumption) and Water Supply (ingestion)
- Recreation (fish consumption only).

Simplot has the following comments for consideration by the Department.

A. Technical Findings of the DEQ Study on Arsenic in Idaho Fish and Waters

The Department has conducted an extensive study looking at total arsenic and inorganic arsenic concentrations in waters and fish at over 20 sites in Idaho. There are two primary findings from this study.

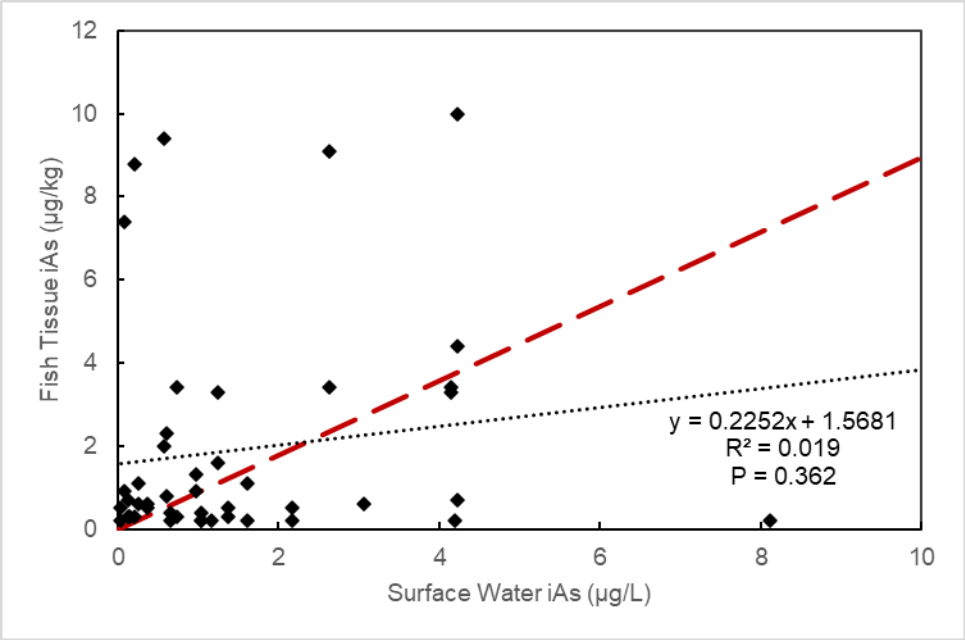
> **In the aggregate, there is no relationship between arsenic concentrations in water and in paired fish tissue**.
> For the vast majority of water quality parameters, the "regulatory model" assumes that water column and fish tissue concentrations are related. This "model" holds for most compounds. Typically, a Bioaccumulation Factor (BAF) can be derived as the ratio of the concentration of a substance in fish

to the concentration of that substance in water. However, such a BAF does need to be examined statistically to determine whether or not it is valid.

When such an analysis is done on the DEQ study data, the relationship between inorganic arsenic in surface water and fish tissue is not statistically significant (see Figure 1 - black dotted line) and has an R^2 value of 0.019. Thus, the state-wide data set shows that lower inorganic arsenic surface water concentrations are not associated with lower inorganic arsenic fish tissue concentrations (and lower fish consumption exposures).

Figure 1

Plot of Paired Surface Water/Fish Tissue Data with Regression-Based and Geometric Mean BAFs Shown



At high inorganic fish tissue concentrations, the relationship between fish tissues and water column concentrations is weak.

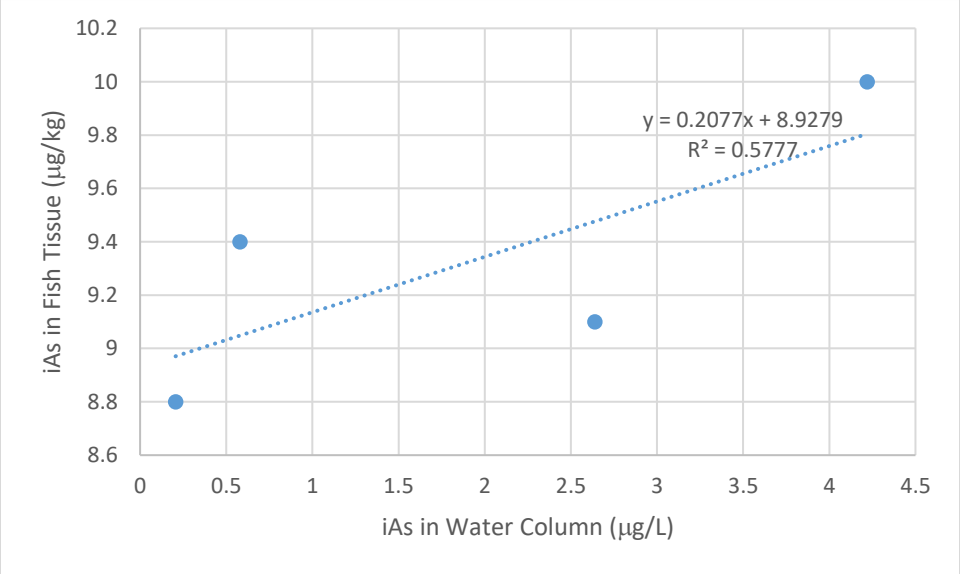
An analysis of the DEQ study data for inorganic arsenic fish tissue concentrations at or greater than 8 µg/L show that the relationship between water and fish tissue concentrations is not that strong. Table 2 shows the four (4) fish samples which had inorganic arsenic fish tissue concentrations greater than 8 µg/kg. The inorganic water column values range from 0.206 to 4.22 µg/L for these four samples, which is a considerable range.

Table 2
Study Data for Fish Tissues with Inorganic Arsenic Concentrations at or Greater than 8 µg/kg

Site ID	Sample ID	Waterbody	Species	Water As-total (µg/L)	Water As-in (µg/L)	Fish As-total (µg/kg)	Fish As-in (µg/kg)
ASP052	ASP052A	Hayden Creek	Rainbow Trout	0.633	0.58	173	9.4
ASP062	ASP062B	Rock Creek	Cutthroat Trout	0.202	0.206	54	8.8
ASP091	ASP091B	Seafoam Creek	Sculpin sp.	2.54	2.64	145	9.1
ASP104	ASP104B	Mores Creek	Bridgelip Sucker	4.52	4.22	108	10

When such data is plotted and a simple regression analysis performed, the R^2 value is 0.578 (Figure 2).

Figure 2
Relationship Between iAs in Water and Fish Tissues at High iAs Fish Tissue Concentrations



Thus, at least for this subset of data (with high inorganic arsenic concentrations in fish tissue) there is more of relationship between the inorganic arsenic

concentrations in fish and water than the entire data set, however the relationship is still weak.

B. Recreation Beneficial Use (fish consumption) Criterion

The lack of a relationship between the inorganic arsenic concentrations in fish and water (including the weak relationship for high fish tissue concentrations) indicates that a water column criterion is likely not appropriate for assuring protection of the fish consumption designated use. A fish tissue value can be calculated for the protection of human health as shown below.

$$Allowable\ concentration\ (8\ \mu g/kg) = \frac{Risk\ x\ BW}{FCR\ x\ CSF\ x\ CF}$$

Where:
Risk = allowable risk, 1 x 10^{-5}
BW = body weight, 80 kg/person
FCR = fish consumption rate, 0.0665 kg/person-day
CSF = cancer slope factor, 1.5 mg/kg-day
CF = conversion factor, 1,000 µg/mg)

The value calculated with this equation is 8 µg/kg $As_{(in)}$.

Based on the data and analysis of the data available at this time, Simplot believes that a fish tissue value of 8 µg/kg is appropriate for the Recreation beneficial use criterion. As described in Section A of these comments, the data gathered so far does not support the technical basis for having a water column number for the criterion.

To ensure protection of this beneficial use, the Department will need to include in the criterion, elements of the implementation, such as a plan for regular monitoring of fish tissues for inorganic arsenic. Such testing can be incorporated into IPDES permits or other regulatory mechanisms.

C. Water Supply and Recreation Beneficial Use (water ingestion and fish consumption)

For this criterion, which includes the ingestion of both water and fish, Simplot believes that a water column value of 10 µg/L $As_{(in)}$ and a fish tissue concentration of 8 µg/kg $As_{(in)}$ are appropriate.

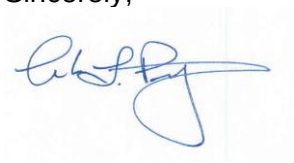
The 10 μg/L $As_{(in)}$ value is the Safe Drinking Water Act (SDWA) Maximum Contaminant Level (MCL). Because of the nature of arsenic in Idaho waters, the MCL value is appropriate as the water column criterion. The MCL represents a concentration of arsenic in domestic drinking water that USEPA has determined is safe. Its adoption as the water and organism human health water quality criterion is not precedent setting in any way as 16 other states use the MCL of 10 μg/L $As_{(in)}$ as their water and organism human health water quality criteria. Thirteen other states have a domestic water supply designated beneficial use and use the MCL of 10 μg/L $As_{(in)}$ as the human health water quality criteria for those water bodies.[1]

The technical basis of the fish tissue concentration of 8 μg/kg $As_{(in)}$ has been described in Section B of these comments.

For this beneficial use to be maintained, it is necessary for both values (water column and fish tissue) to be met. As described in Section B, a rigorous plan of fish tissue monitoring will need to be implemented to assure that the beneficial use is maintained.

We appreciate the opportunity to provide these comments.

Sincerely,



Alan L. Prouty
Vice President, Environmental & Regulatory Affairs

[1] See Tables 4 and 5 of IACI's August 21, 2020 comments.