

# ARE ALL ARSENIC EXPOSURES TOXIC? *Moving Science into Action*

## Supporting Regional Risk Assessments through Improved Arsenic Speciation Methodology

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### Environmental Issue: Arsenic Exposure

#### How does Arsenic Enter the Environment?



1. Naturally



3. Pesticides



2. Wood Preservative



4. Medicinal Purposes

#### What are the Major Pathways for Human Exposure to Arsenic?



1. Drinking Water

> Composed of All Toxic Arsenic



2. Seafood

Composed of Toxic and Non Toxic Arsenic

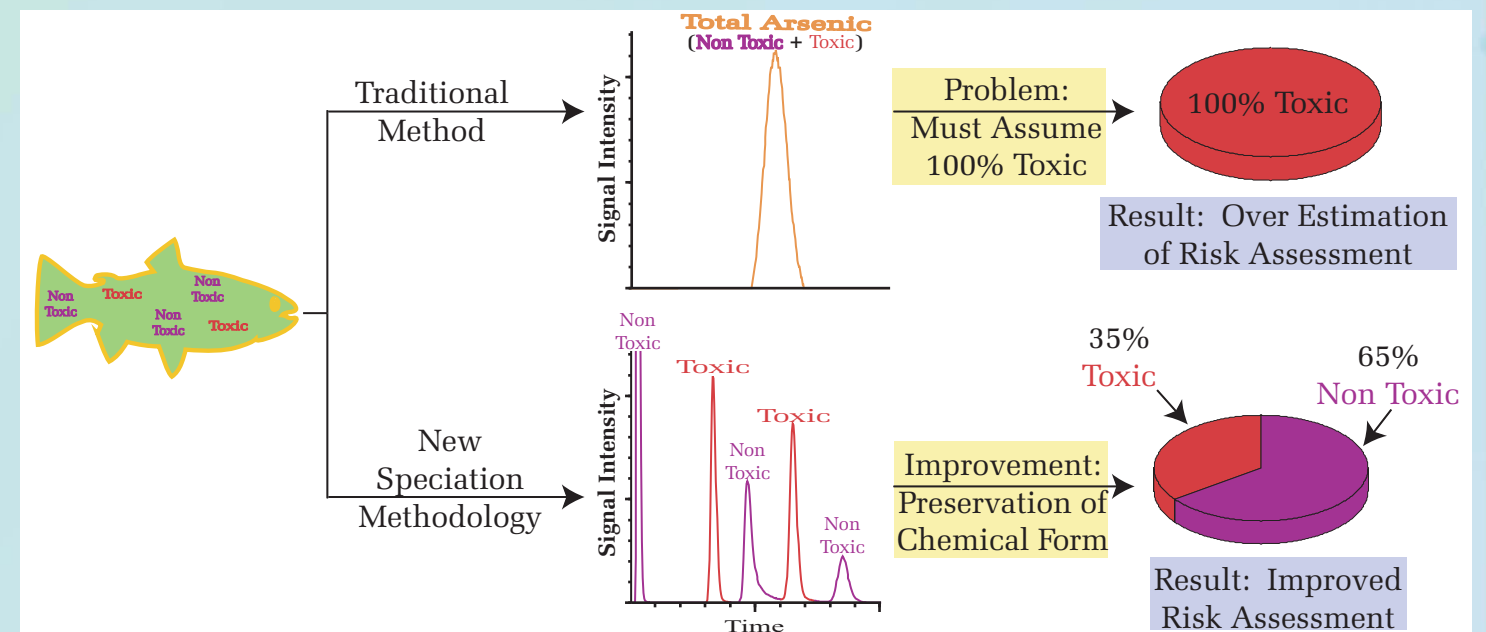
Recognizing that all chemicals are potentially Toxic depending on the dose, the term "Non Toxic" is very loosely used to illustrate the fact that some forms of arsenic are not expected to present significant health risks at environmental exposure levels, while other forms of arsenic do present health risks at environmental exposure levels.

#### What is the Problem?

1. Traditional Analytical Methods do not Separate the Toxic forms of arsenic from the Non Toxic forms. > NET EFFECT: Over Estimation of the Risk
2. Seafood's total arsenic concentrations are high and contains both Toxic and Non Toxic forms.
3. High seafood consumption rates in coastal regions produces a sub-population with the potential for elevated arsenic exposures.

### Scientific Approach

1. National Exposure Research Laboratory (NERL) Scientists are developing the scientific capability to separate (i.e., speciate) the toxic and non toxic forms of arsenic in water, food and biologicals.
2. This capability will allow the amount of non toxic forms of arsenic to be reported individually.
3. These separate concentrations can then be used to better estimate the risk associated with an arsenic exposure.



### The Impact on the Issue

1. Providing the Regions with analytical methodologies capable of separating toxic arsenicals in dietary and drinking water matrices allows them to better define the magnitude of the risk associated with a given exposure.
2. It will allow Regional Scientists to provide improved exposure/risk assessments associated with fish advisories and human health.

### Acknowledgement

We would like to thank Region 10 (Roseanne Lorenzana, Isa Chamberlain and Stephanie Le) for the seafood samples and collaborative work on this project.

