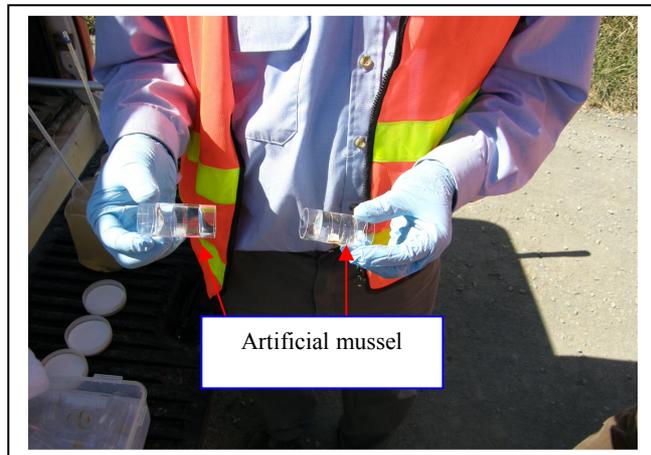


“Artificial Mussel” - A New Global Environmental Risk Assessment Tool

Until now, scientists from North America, Europe and Asia have been using live mussels to monitor heavy metals (**HM**) pollutants in aquatic environments. Live mussels can bioaccumulate very high concentrations of HM (thousands to millions time higher than the background level). However, there are some constraints in such monitoring since it requires the killing of animals, moreover, bioaccumulation of HM can be affected by both abiotic (e.g. pH, salinity) and biotic (e.g. growth, reproduction, excretion) factors. Furthermore, researchers have used various mussel species due to non-availability or limited geographical distribution.

Artificial mussel or **AM** is a new passive sampling device. It is a 6 cm x 2.5 cm tube in which a metal binder (Chelex-100) is suspended. The device does not require energy or power and operates by the laws of diffusion. It is simple to deploy and retrieve and can uptake both bioavailable and toxic fractions of heavy metals.

AM is a standard tool for monitoring of heavy metals in most aquatic environments including rivers, channels, creeks, waste water, recycled water, ground water and seawater. AM can even be used in areas where bioindicators (live mussels) are not available. This would enable better comparisons to be made worldwide since it is difficult to standardize data from using different indicator organisms.



AM deployed in world environmental waters have accumulated cadmium, chromium, copper, cobalt, iron, lead, mercury, nickel and zinc. The current global artificial mussel watch program is being run in eight countries including Australia, Canada, China, Ireland, Portugal, Scotland, South Africa, and the USA.

References

Kibria, G., Rose, G, Wu, R., Lau, T.C., Leung, C.Y.K., and Chan, A. 2009. "Artificial Mussel" a new environmental risk assessment tool for heavy metals monitoring in surface waters - Pilot Study. Paper presented at the 13th Australasian Society for Ecotoxicology Conference held in Adelaide` 20-23 September.

The article is based on various sources and was compiled by Golam Kibria, Ph.D in September 2009 for <http://www.sydneybashi-banqla.com> (14) for community benefits. Views expressed in this article are those of the author and are not to be taken to be the views of any others including third parties. The information in this article may be assistance to you but the author donot guarantee that it is without flaw of any kind and therefore disclose any liability for any error, loss or other consequences which may arise from relying on any information in this article.

