conferenceseries.com

Pollut Eff Cont 2016, 4:2(Suppl)
http://dx.doi.org/10.4172/2375-4397.C1.003

International Conference on
Pollution Control & Sustainable Environment

April 25-26, 2016 Dubai, UAE

## Impact of Storm water and agricultural practices on water and soil quality along the major tributary areas of Mandulog Watershed in Iligan city, Philippines

**Ma Cecilia V Almeda**
Mindanao State University-Iligan Institute of Technology, Philippines

Water and soil qualities reflect combined effects of many processes along water pathways. On the other hand, quality deterioration is largely caused by anthropogenic activities and unpredictable climate changes. At the watershed scale, changing climate has large impact on the soil's nutrient. Such is the case in the Mandulog Watershed in Iligan city. After the devastating super typhoon "Wasi" in December 2011, the researchers aimed to document initial assessment of soil and stream water quality at the downstream barangays Digkilaan and Dodiongan of the Mandulog Watershed. Physicochemical analysis of representative soil samples revealed that the area is still in its vegetative state. The clay-loamy characteristic of the samples is indicative of an adequate amount of organic matter content (2.85-3.54 ppm). It also implies soil's has high capacity for water retention and buffering capability, thus delaying the soil acidity that could be caused by fertilizer inputs. The soil has normal pH range of 6.0-7.3; phosphorus content of 6.83-9.50 ppm (moderate range); potassium content of 0.33-0.43 ppm (adequate range). Portions of the sampling area had landslides, which may alter the soil's nutrient balance. Sizes of major streams and creeks noticeably diminished. The significant loss of water could be due to irrigation and the last destructive storm flood. Analysis of stream water samples revealed the pH range of 7.8-8.1; nitrate and phosphate content are within normal range indicating that the streams are not yet threatened by eutrophication. The conductivity values are at normal range indicating undetected dissolve heavy metals.

sesillea@gmail.com

## Atmospheric deposition of mercury to the Athabasca oil sands region, Alberta, Canada: Understanding controls on mercury and methylmercury loadings in the open and under the forest canopy

**Chelsea Willis**
University of Alberta, Canada

Atmospheric deposition of contaminants is a concern in the Athabasca Oil Sands (OS) region of Alberta, Canada with potential emission sources including bitumen upgrading facilities, vehicle emissions, volatilization from tailings ponds and blowing dusts from land disturbances including open pit mines, roads and land clearing. We have been monitoring winter-time contaminant loadings in the AOSR using snowpack measurements since 2011 and have found that concentrations of numerous inorganic and organic contaminants, including mercury (Hg) and methylmercury (MeHg; the toxic form of Hg that biomagnifies through food webs), increase with proximity to the major oil sands developments. Although these results suggest that the developments are a direct source of THg and MeHg to nearby watersheds, *in situ* production of MeHg via snowpack methylation is a possibility given the complex mixture of particles, nutrients and other contaminants present in snowpacks of this region. In addition, in other boreal regions of Canada, dry deposition of MeHg can be 1.4 to 4 times higher under forest canopies than in the open because the forest is an efficient scavenger of aerosols and particulate matter from the atmosphere. In the OS, boreal forest comprises a much larger proportion of the landscape than open areas. To determine the role the forest canopy plays in controlling Hg deposition in the OS, we began quantifying snowpack loadings of Hg and MeHg both in the open and under the forest canopy at 25 sites in winter 2015. To quantify Hg and MeHg deposition under the forest canopy from the spring to fall months, a network of litter fall collectors was also deployed in May 2015. In addition, to determine the origin of MeHg in snowpacks of the OS, a series of *in situ* incubation experiments using stable isotopes of Hg(II) and MeHg were performed to determine potential rates of Hg methylation and demethylation in OS snowpacks. Results will be presented within the context of 2011-2015 spatial and temporal trends in winter time Hg and metals deposition. This work will improve watershed scale estimates of THg and MeHg loadings and provide a more comprehensive understanding of the potential impacts of MeHg inputs on the ecosystems of the region.

chelsea.willis33@gmail.com