

NEWS RELEASE

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NSERC awards grant worth \$400,000 to Laurier researcher

Dr. Richard Playle studies how natural organic matter in fresh water protects fish from metals

For Immediate Release

**December 10, 2002
96-02**

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WATERLOO – Laurier biologist Dr. Rick Playle and two colleagues have won a significant Strategic Research Grant from the Natural Sciences and Engineering Research Council.

The award, worth \$100,060 annually for four years, will allow Playle (the principal investigator), Dr. Jeff Curtis of Okanagan University College in Kelowna, B.C. and Dr. Kent Burnison of the National Water Research Institute in Burlington, to continue their research on how natural organic matter in fresh water protects fish from metals in the water.

Metals such as silver, lead, cadmium, aluminum and copper can occur naturally in water, or they can be present as a result of mining or smelting operations. Freshwater fish need to take up sodium, chloride and calcium from the water to live, but their gills cannot distinguish between, for example, calcium and cadmium.

At high enough levels, metals can kill fish. However, metals can be bound to dissolved organic material in the water from sources such as decayed leaves.

“The metal is then less available to the fish,” says Playle. “It stays with the organic matter” which eventually either sinks to the lakebed or riverbed or moves downstream.

Playle and his colleagues will collect natural organic material from water at various sites across the country, “to get a good cross section of the hydrologic, climatic, and geologic diversity of Canada.” The organic material will be removed from water in the field with

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portable reverse osmosis units, then reconstituted with pure water in the three labs. Low concentrations of metals will be added and tests will be conducted to determine how quickly metals bind to fish gills. Metals bound to the gills will be measured using a graphite furnace atomic absorption spectrometer funded by the Ontario Innovation Trust/Canada Foundation for Innovation Trust.

In conjunction with the NSERC grant, Playle and his colleagues will receive funding totalling about \$13,000 annually from mining companies Falconbridge Ltd. and BHP Billiton Base Metals. The companies are interested in this research because, to comply with environmental regulations, they need to know which areas near their operations are most sensitive to water-borne metals.

“With this type of modelling, they will be able to make predictions of what might happen if a new mine was developed,” says Playle. “Once they know the characteristics of the water in the area, and knowing that water containing lots of organic matter is not as sensitive as water with little organic matter, and vice versa, they can plan accordingly.”