

Water testing results following spray application of Btk (*Bacillus thuringiensis* var. *kurstaki*)

In June 2015 forested areas in the Eel River and Charlo River watersheds were sprayed with two applications of Btk to control a growing spruce budworm population in that area. Btk is a naturally-occurring bacterium that has been used for decades to control caterpillar pests in organic agriculture greenhouses and forestry. Btk is being used in the early intervention research to control spruce budworm populations.

The Eel River and Charlo River watersheds provide drinking water to several communities in northern New Brunswick. In response to concerns about water quality a water monitoring project was initiated by the Healthy Forest Partnership. Water samples were collected near the water treatment plant at Eel River Crossing and near the Charlo Dam as well as areas upstream of these installations. Samples were taken 1 week prior to and 1 day, 2 weeks and 2 months after the spraying of Btk. Very little Btk was found in the water before the spraying took place.

The toxicity of Btk is measured as the number of colony forming units (CFU) per millilitre (mL) of water. Numerous tests conducted over decades on rodents determined that no toxicity occurred up to 125 000 000 CFU/mL. The highest level of Btk was found in the Charlo River (618 CFU/mL) and occurred one day after the second application of Btk. This level is over 200 000 times less than what has ever been tested (and still found to cause no adverse effects). To put this in perspective, if we consider the highest levels of Btk ever tested for mammals where no toxicity was found it is comparable to the height of the CN Tower while the levels found in the Charlo River would be about the height of two stacked pennies.

The level of Btk found in the Eel River and Eel River Reservoir and was much lower (less than 1 CFU/mL). The table below shows the toxicity levels for rodents (mammals) and freshwater fish in comparison to the levels of Btk in the water 1 day, 2 weeks, and 2 months after the second application of Btk.

	Highest level ever tested (no adverse effects found) CFU/ml	Charlo River (CFU/ml after)			Eel River (CFU/ml after)		
		1 day	2 wks	2 mos	1 day	2 wks	2 mos
Rodents	125 000 000	618	8	3	0.7	0.1	0.04
Freshwater fish	22 500 000	618	8	3	0.7	0.1	0.04

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