Let's look at an example of how cumulative effects occur:

Imagine a mid-sized river running through undisturbed boreal forest. The water is cold and clear, and moves quickly. A good number of fish live and spawn in this river, and the water is good to drink.

At one point, the river passes by an outfitter's camp. It isn't a big camp, but even so, it has an effect on the river. The grey water from the kitchen is emptied into a hole in the ground (sump). Gasoline and oil for boat motors and generators are stored on site and sometimes small amounts are spilled when refueling. There is an outhouse at one end of the camp. Over many years, when rain water and snow melt flow through the soil, they carry contaminants from the sump, fuel storage, and the outhouse down to the river.

Later, the river flows through an area that has been logged. When trees are clearcut, the soil loses a lot of its natural protection, and more soil washes into the river when it rains and when snow melts. The river now becomes murky because of the particles of soil that are suspended in the water. Since it is difficult for fish to feed or reproduce in this kind of water, there are now fewer fish in the river.

Further downstream, water is being pumped from the river to supply a mining operation which needs a lot of water to crush and wash the ore that is being mined. The water that is left over is then treated to remove harmful chemicals, and pumped back into the river, but it now contains a few more chemicals than before it was taken from the river. As a result, the water level in the river is a little bit lower, and the water might now be unsafe to drink without treating it first.

The river soon reaches an area where there are a number of farms. Water is needed for use in farm homes, as well as for livestock and irrigating crops. When run off from rain or snow passes through this area, it sweeps contamination from livestock waste into the river, as well as pesticides and insecticides from adjoining fields.

By the time the river passes through this area, the water level is much lower. The quality of the water has also dropped because of increased chemicals, bacteria, and suspended solids. Fewer fish live in this portion of the river than do upstream. It is a very different river than the one we saw flowing through the boreal forest.

As you can see, no one activity can be blamed for the changes in the river, but the combined result was significant.

Courtesy of [Aboriginal Affairs and Northern Development Canada](http://www.ainc-inac.gc.ca/ai/scr/nt/ntr/pubs/CEG-eng.asp)