Burning Dioxins On Camp Fires

The most serious pollutant given out by burning plastics, creosote and rubber is a family of chemicals called Dioxins. These are bad both for human health and the environment.

Dioxins can damage the human immune system and the nervous system. They also cause cancer (most research has been done on breast cancer but others may be important too). Also, research has suggested they may lead to birth defects, this has been shown a lot in animals where exposure has led to the birth of young with mixed male female characteristics. Dioxins are also thought to cause impotence.

Once in your body (or in an animal's body), dioxins don't get broken down, instead they get stored in the body fat. So even fairly small amounts can build up in your body to a dangerous level. Also, because they are not broken down, they live for a very long time in the environment. Many studies have shown animals living in remote regions (e.g. the Arctic) have surprisingly high levels of dioxins, even though they live very far from the sources of dioxins, i.e. because dioxins are such a stable chemical species their effects are still felt very far from their sources.

One could argue that a lot of plastic gets incinerated so you may as well burn it on a campfire. The big problem with that argument is that burning rubbish on a campfire is much worse than burning in an incinerator for two reasons:

- Incinerators are designed to burn things at a very hot temperature so a lot of the harmful pollutants (e.g. the dioxins) are mostly destroyed. They also filter the waste gas before releasing it; removing particulates which are bad both for human health and the climate.
- Incinerators release their waste gas high into the atmosphere so only a small amount of it comes down to ground level (once you're out of the bottom layer of the atmosphere things tend to get carried upwards and spread out more). In a campfire you can see that although the smoke rises, it generally doesn't go very high and most of the smoke stays at ground level. Bad both for the people sat round the campfire and for the general level of pollution in the area.

Burning plastics/rubber will produce a whole cocktail of other chemicals as well as dioxins (indeed there are a whole range of dioxins too). What else is produced will depend on the makeup of the item burnt and the temperature. The other important by-product of burning rubber/plastic is soot (or black carbon). Obviously, all fires produce soot, but rubber tends to smoke a lot so produces more soot. This is important again for health, as these particles are very small so when you inhale they go right down into the depth of the lungs which cause irritation, asthma and can of course cause cancer (with prolonged exposure). The soot particles released into the atmosphere are black so they can absorb the sun's rays and contribute to global warming.

In summary, burning one plastic bag is unlikely to push the world's global dioxin budget over the edge but it will contribute as the dioxins are released and will probably be in the environment for over a decade. Rather more importantly for paddlers, think of how much smoke you inhale sitting round a campfire...