

# Persistent Organic Pollutant Accumulation in the Arctic

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# PERSISTENT ORGANIC POLLUTANT ACCUMULATION IN THE ARCTIC

by Rachel T. Kirby\*

The Arctic is one of the last regions of the world that remains seemingly untouched by modern human existence. A closer look, however, reveals the effects of pollutants on the human and animal populations in the Arctic. Persistent Organic Pollutants (“POPs”) are toxic chemicals such as pesticides and industrial by-products that break down very slowly in the environment.<sup>1</sup> POPs reach the Arctic from smokestacks and factories all over the world and then accumulate within the tissues of each animal in the food chain. The higher on the food chain, the higher the concentration of POPs in the animal.

The nature of the Arctic environment causes POPs to break down more slowly and accumulate in the food chain with more potency than they would in other environments.<sup>2</sup> POPs arrive in the Arctic via atmospheric and ocean circulation patterns which bring pollution from human sources to the Arctic.<sup>3</sup> There, POPs typically enter the food chain through plankton in sea water. When the plankton is eaten by fish, POPs accumulate in the fish, which are then eaten by larger fish or mammals which accumulate more POPs in their fatty tissues. Each step in the food chain creates a more concentrated reservoir of POPs.<sup>4</sup>

The result of this cycle is that at the top of the food chain, humans, polar bears, and other large predators have chemical levels high enough to cause health effects<sup>5</sup> even though the nearest source of contamination might be thousands of miles away.<sup>6</sup> Reduced immune system function, reproductive effects, and behavior changes have been observed in many predators.<sup>7</sup> The levels of POPs in some Inuit tribes in Greenland are so high that their breast milk and tissues could be classified as hazardous waste.<sup>8</sup> As a consequence, their infants show altered brain development and suffer greater infection rates because of reduced immune system function.<sup>9</sup>

While the eight countries with territory in the Arctic have established an Arctic Council to provide a forum to discuss environmental and other issues,<sup>10</sup> the very nature of pollution in the Arctic requires a worldwide solution. In 2001, countries around the world adopted the Stockholm Convention on Persistent Organic Pollutants<sup>11</sup> to reduce or eliminate twelve POPs (the “dirty dozen”), with provisions to include other substances in the future.<sup>12</sup> The Stockholm Convention, which the United States has yet to ratify,<sup>13</sup> is a step towards a real reduction or elimination of toxic chemicals from the environment in the Arctic and elsewhere.<sup>14</sup>

The Convention follows the precautionary principle and allows parties to regulate additional chemicals even if complete scientific certainty of their adverse effects is lacking.<sup>15</sup> Nonetheless, the positive effects of regulated POPs will not yield immediate positive effects in the Arctic due to the large reservoir of

POPs remaining in the Arctic Ocean.

The Arctic environment is unique and serves as a warning sign of the pressures humans place on the natural world. The Arctic Council is a forum for discussing issues facing the Arctic as a whole, especially issues of environmental protection and sustainable development.<sup>16</sup> The Stockholm Convention provides

a worldwide framework and channel for countries to limit the harmful affects from accumulating POPs in the Arctic.<sup>17</sup> In order to provide the special protection that the Arctic requires, parties to the Stockholm Convention should be ultra “precautious” and add additional POPs to the banned “dirty dozen.” More chemicals should be added to the Stockholm Convention before accumulation of yet-to-be-banned POPs reaches dangerous levels in the Arctic.



*Each step in the food chain creates a more concentrated reservoir of POPs.*

## Endnotes:

- <sup>1</sup> ANNIKA NILSSON & HENRY HUNTINGTON, ARCTIC MONITORING AND ASSESSMENT PROGRAMME, ARCTIC POLLUTION 8 (2002), available at <http://www.amap.no/> (last visited Apr. 5, 2008).
- <sup>2</sup> Sarah R. Hamilton, Note, *Toxic Contamination in the Arctic: Thinking Globally and Acting Locally to Protect Arctic Ecosystems and People*, 15 *COLO. J. INT'L L. & POL'Y* 71, 85–86 (2004).
- <sup>3</sup> David VanderZwaag et al., *The Arctic Environmental Protection Strategy, Arctic Council and Multilateral Environmental Initiatives*, 30 *DENV. J. INT'L L. & POL'Y* 131, 136 (2001).
- <sup>4</sup> VanderZwaag, *Id.*
- <sup>5</sup> NILSSON & HUNTINGTON, *supra* note 1, at xi.
- <sup>6</sup> Peter L. Lallas, *Current Development: The Stockholm Convention on Persistent Organic Pollutants*, 95 *A.J.I.L.* 692, 695 (2001).
- <sup>7</sup> NILSSON & HUNTINGTON, *supra* note 1, at xii.
- <sup>8</sup> Marla Cone, *Ancestral Diet Gone Toxic*, *L.A. TIMES*, Jan. 13, 2004, at A1.
- <sup>9</sup> Cone, *id.*

**Endnotes:** Persistent Organic Pollutant Accumulation in the Arctic  
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**ENDNOTES: PERSISTENT ORGANIC POLLUTANT ACCUMULATION IN THE ARCTIC** *continued from page 31*

<sup>10</sup> Evan T. Bloom, *Current Development: Establishment of the Arctic Council*, 93 AM. J. INT'L L. 712, 713 (1999).

<sup>11</sup> Stockholm Convention on Persistent Organic Pollutants, U.N. Doc. UNEP/POPS/CONF/4 (May 22, 2001), *available at* [http://www.pops.int/documents/convtext/convtext\\_en.pdf](http://www.pops.int/documents/convtext/convtext_en.pdf) (last visited Apr. 5, 2008).

<sup>12</sup> Lallas, *supra* note 6, at 699.

<sup>13</sup> Daryl W. Ditz, *The States and the World: Twin Levers of Reform of U.S. Federal Law on Toxic Chemicals*, SUSTAINABLE DEV. L. & POL'Y, Fall 2007, at 27, 29.

<sup>14</sup> Lallas, *supra* note 6, at 704–05.

<sup>15</sup> United Nations Environment Programme, *Ridding the World of POPs* 12 (2005), *available at* [http://www.pops.int/documents/guidance/beg\\_guide.pdf](http://www.pops.int/documents/guidance/beg_guide.pdf) (last visited Apr. 5, 2008).

<sup>16</sup> Bloom, *supra* note 10, at 713.

<sup>17</sup> Melissa A. Verhaag, Note, *It Is Not Too Late: The Need for a Comprehensive International Treaty to Protect the Arctic Environment*, 15 GEO. INT'L ENVTL. L. REV. 555, 576 (2003).

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