

# Pollution strikes at the heart!

Pollution not only affects animals and nature, it also threatens our health. Our hearts suffer, and not only from sadness about the deteriorating environment.

By Madeleine Huberdeau

For a long time it was thought that genetics, tobacco, high blood pressure, high cholesterol levels, diabetes, and, more recently, obesity and sedentary lifestyles were the major causes of heart disease. However, there are other factors too. Since the 1990s studies have shown that pollution plays an important role in triggering heart attacks and strokes. These studies all demonstrated that increased pollution heightens the risk of heart disease, stroke, malignant arrhythmia, phlebitis, pulmonary embolism, hardening of the aorta and arteries, and other conditions.

*Desjardins and Me* discussed this phenomenon with cardiologist François Reeves, author of the book *Planète cœur – santé cardiaque et environnement*.

**Desjardins and Me:** Dr. Reeves, why did you write this book, which is in a way a plea on behalf of the environment?

**François Reeves:** *Planète cœur* is a response to the many unanswered questions I had while writing my first book, *Prévenir l'infarctus... ou y survivre* in 2007. So I proceeded to read through public health and environmental literature, which I knew almost nothing about. I found significant differences in heart disease rates depending on historical period and location. It's as if during the industrial revolution, people traded healthy arteries for a modern lifestyle!

Anthropologists tell us that before the industrial revolution, heart and vascular illnesses were rare. However, the massive use of fossil fuels (coal, oil, and gas) tripled or quadrupled the rate of heart attacks and strokes in certain societies. This was the case during the industrial boom in North America and England between 1900 and 1950, accentuated by coal-based military production during the two world wars. The same phenomenon is happening today in the major emerging countries: China, Russia, and India. Their industrial revolution, almost

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entirely based on coal and oil, has been accompanied by a cardiovascular mortality rate that quadrupled between 1950 and 2000. I wanted to present these studies to bring the problem to the attention of as many people as possible.

**Desjardins and Me:** The industrial revolution also changed the way we eat. You address this issue in your book.

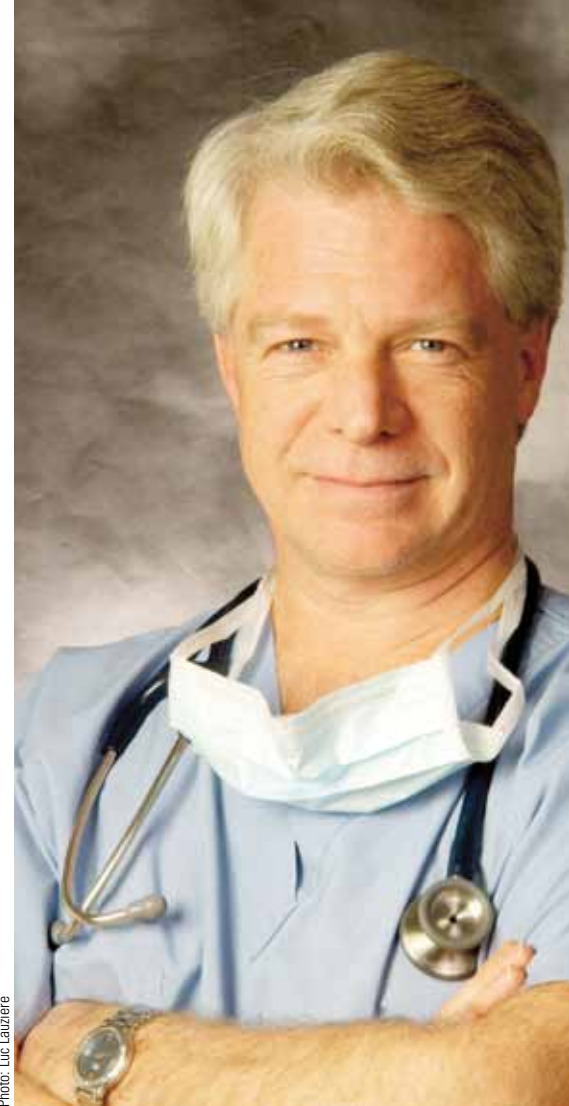


Photo: Luc Lauzière

**François Reeves:** Yes, by industrializing our food system, we introduced a number of substances into our food that have turned out to be quite harmful. Some of the main ones are fructose/glucose syrup, trans fats, phosphoric acid, and the addition of large amounts of salt. It is now proven that these artificial molecules, which are mainly used to enhance food preservation, presentation, and taste, lead to obesity, diabetes, high blood pressure, high cholesterol levels, dyslipidemia, cardiometabolic syndrome, osteoporosis, demineralization, and bone growth

disorder, not to mention all problems we have yet to discover. What's more, these molecules would never pass current Food and Drug Administration (FDA) tests. They are slow poisons, like a pinch of arsenic every day. And it's not just fast food that is the problem. Much of the industrial food we buy in the grocery store is harmful to our all-important vascular system. The solution



is to read labels carefully and choose locally grown organic foods.

Every day our hearts and brains are subjected to attacks by a whole raft of tiny aggressors contained in what we eat (equivalent of a kilogram), drink (two litres or two kilograms), and breathe (20,000 litres of air, therefore 20 kilograms), namely fine particles of soot, CO, SO<sub>2</sub>, NO<sub>2</sub>, ozone, and volatile organic compounds. All these molecules cause a veritable vascular storm that “rusts” our arteries through oxidative stress.

**Desjardins and Me:** It is difficult for city-dwellers to avoid pollution where they live. What options do we have, besides moving to the country?

**François Reeves:** The overall solution is simple: eliminating these tiny aggressors should lead to a spectacular drop in cardiovascular disease and probably cancer and other chronic illnesses. But to bring these changes about, people must get informed, get involved—there are plenty of environmental organizations out there—and speak out.

In densely populated urban areas, we have to set up and protect large islands and corridors of green space. They absorb some of the air pollution and signi-

ficantly lower the temperature of downtown areas, which tend to be hot spots. Pollutants are more toxic at higher temperatures, which boost ground-level ozone, toxic to lungs and arteries.

**Desjardins and Me:** You talk a lot about trees in your book. You even describe them as our brothers. How did this notion of a human–tree symbiosis arise?

**François Reeves:** Hemoglobin in human blood and chlorophyll in trees have exactly the same molecular structure, which is clear evidence of our common history. The difference is that hemoglobin’s protein, or heme, contains iron, which gives it its red color, and the heme in chlorophyll contains magnesium, making it green. Their respective role is to ensure the passage of oxygen and CO<sub>2</sub> between plants and animals. Humans take in oxygen and exhale CO<sub>2</sub>, while trees capture CO<sub>2</sub> and return oxygen to the air, in perfect complementarity.

This sense of connection and protection between humans and trees was confirmed in 2008 by the findings of a huge five-year study on 40 million people in England. It showed that green spaces reduced general mortality by 6% and cardiac mortality by 50% in rich and poor alike living in urban areas.

Therefore interventional cardiology overlaps with environmental cardiology. Un-

## Did you know?

Heart disease likely accounts for about 50% of environmental illnesses. Environmental pollution likely causes about 25% of cardiovascular illnesses. This represents 5,000 to 11,000 deaths and 33,000 to 67,000 hospital stays a year. The annual cost is enormous: \$9.1 billion and 1.5 million hospitalization days.

fortunately a heart attack is always more effective in raising awareness than a talk on polar bears. Yet planting a tree is as beneficial as unplugging an artery! ■



### For more information

- *Terracide* by Hubert Reeves
- *Tree: A Life Story* by David Suzuki

### Web sites:

- [David Suzuki Foundation](#)
- [Équiterre](#)