

Brains, our minds included, are the most marvelous, mysterious, and complex creation known. Early on I stumbled on the question of what separates the mind from the brain, what makes us who we are. It was a short step to wondering how the brain was created and how it worked to shape the mind of each of us. At birth the human brain weighs about 350 grams and by adult hood it has quadrupled in size to about 1,300 grams. Hard to imagine but at its peak the brain is developing at rate of 250,000 neurons per minute on the way to 100 billion neurons, give or take a few million. Each neuron connects with other neurons with up to 10,000 connections per neuron. In essence, ‘connections are us’. Indeed the neuron and its connections are fundamental to the nature of all living things.

My interest in the brain and its influence on the mind lead me to investigate chemicals that disrupt the development of neurons or upsets the connections and communication between neurons. This lead me to the field toxicology and years of research that showed that even very low levels of some chemicals can affect the brain. Even though the brain seems well protected in its bony shell, experience and research documents that the developing brain is very vulnerable to chemical exposures. Pregnant women or mothers exposed to mercury or lead or drinking alcohol during pregnancy clearly leads to subtle damage to the brain and thus affecting the mind. As a scientist, I conducted research that showed that even very low levels of a chemical can affect the developing brain. The chemicals were damaging the neurons and changing the connections, altering one’s mind. These changes reduce a child’s ability to learn and remember thus robbing a child and society of their full potential.

I believe that all living things have a right to an environment that allows them to reach and maintain their full potential. The salmon have a biological need and a right to get up stream to bear their young so they too may reach their potential. Each of us and especially our leaders have an ethical responsibility to ensure that offspring of all species can grow and develop in an environment that is not robbing them of their potential. It is no longer a question whether or not exposure to chemicals damages the developing infant. The research has largely been done. We have the knowledge and now must face the challenge of turning this knowledge into action.

I love science and research and believe it can provide the answers and direction we need to make decisions that ensure a sustainable future. However, science can not achieve protection of children alone. Research has lost its appeal for me; I have now turned toward finding ways to apply the knowledge we have and to find ways to communicate this knowledge to help others make informed choices. I believe that it is my responsibility to share the knowledge I have, to help ensure the potential of our children and our future.

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