Today, some of the most important scientific research informs us about how our actions really can make a difference in living healthier lives. Some organic compounds that contain phosphorus have dangerous neurotoxic impacts associated with them. Dr. Clement Furlong and his colleagues have designed research questions to discover more about the risks of organophosphate (OP) pesticides to human health. Each of us, as individuals, may ‘metabolize’ (process) OPs differently and therefore some of us are more susceptible than others to the toxic effects of OP exposure. Dr. Furlong’s lab has learned a great deal about human paraoxonase (called PON1) that is an enzyme that metabolizes OP pesticides. There are several forms of the PON1 gene. People who have low PON1 activity are found to be more susceptible to the toxic effects of OPs and are at greater risk for certain other health problems involving oxidative stress, such as cardiovascular disease, Parkinson’s disease, diabetes and Alzheimer’s disease.

How can our actions make a difference? We know that although the PON1 trait is an inherited genetic factor, its beneficial activity can be influenced by environmental factors, such as by responding positively to our intake of good foods that have vitamins C and E (like blueberries). Actions taken to implement effective new biomonitoring regiments for OPs exposure in agricultural settings have improved assessment and response to exposure risks, protecting human health. These valuable protocols are a result of research of Dr. Furlong and others.