Watts Remy

From: Kyle Elwood <kreede@comcast.net>
Sent: Monday, April 1, 2019 9:14 PM
To: SENR Exhibits
Cc: Kyle Elwood
Subject: re: SB 926 and SB 931

"Chair Dembrow and members of the Committee,"

I am a pharmacist. The experience gained from my direct interactions with patients has imparted on me the knowledge that people, in general, develop an insensitivity to the inherent risks associated with medications (chemicals) that they take 'as prescribed' by their providers. These 'chemicals' are an everyday part of their lives. They are being taken because
they are meant to have a direct beneficial effect on their health. As such, they develop the attitude that they are safe… even with the potential side effects communicated by the health team.

'Chemicals' usually have more than one effect (can affect more than one receptor type) on biological systems. Humans (and
other animal species) have a tremendous number of receptors and biochemical pathways in our bodies that can be impacted
by chemicals of ALL types. Because of similarities of the chemical structure, 'chemicals' can compete for receptor sites with
the normal chemical or hormone naturally produced or utilized by the body for that receptor type. The effect of the competition by the foreign chemical can demonstrate itself in numerous ways, the competition can cause agonist or partial
agonist effects (works like the normal chemical but can have an equal to, less than or greater then effect than the normal
chemical), or it can be an antagonist (blocks some or all of the effects of the receptor). Super agonist effects can cause an
upregulation of the receptor and the biological pathways associated with that receptor. Besides the more immediate health
consequences of this (toxicity), a long-term consequence of the upregulation of biological pathways can be…cancer and metastisis as well as other long-term toxicities. Antagonist effects are much the same.

Let's talk about the chemical produced by the body called acetylcholine. There are two major systems that make up the human
nervous system, the sympathetic nervous system (fight or flight effects…primarily run by receptor agonists: epinephrine and
norepinephrine) and the parasympathetic nervous system (automatic, unconscious biological actions run primarily by the
neurotransmitter chemical, acetylcholine). Acetylcholine has many effects on the body. Acetylcholine manages the digestive
tract….salivation, swallowing, stomach emptying, movement of material through the intestinal tract and elimination. Acetylcholine also participates in eye function, urinary tract function (bladder emptying) and sweat gland function. If a chemical
has an acetylcholine blocking effect, you could see things like pupil dilation, dry mouth, constipation, difficulty urinating, dry skin,
dry eyes, et al.

An older class of 'chemicals,' known as organophosphates, were used in chemical warfare and later used as insecticides (malathion,
as an example). Acetylcholinesterase is a naturally occurring chemical (enzyme) made in the human body to rapidly break
down acetylcholine after it has been released in the nervous system. If you block acetylcholinesterase, which organophosphates
do, this causes a rapid build up of acetylcholine in the body leading to short-term effects such as pupil constriction, excessive
salivation, excessive sweating, hyperactivity of the gastrointestinal and urinary tracts (diarrhea, defecation, urination), lacrimation
and excitation. Long-term effects due to severe levels of organophosphate poisonings can lead to severe nervous system toxicity
and various forms of nerve damage, including quadriplegia. Short and long-term exposure can lead to reduced sperm counts (were you aware that the sperm count in males around the world have dropped by 50% in the last 80 to 100 years?) and
nerve demyelination. How many people took for granted the safety of these organophosphate pesticides that were commonly
present in forest, farm and household pesticide products…to the detriment of many, many individuals…both by direct and indirect
exposure.

What 'chemical' or pharmacological effects does the pesticides/herbicides being used in the forest industry today have? How much
Has this potential impact been tested? Have the management teams and individuals who are selling and/or administering these
products maintained a sense of the short-term and long-term risks of deploying these 'chemicals' in the environment…to humans,
animals and ecosystems (from the forest to the streams, to the rural areas, to the cities and to the oceans)?

I hope you will consider the ramifications of herbicide and pesticide use on forests and roadsides and the potentially severe impact on
on people, animals and the environment, in general, and attempt to find alternative methods to accomplish the same goals as you are
attempting to use these 'chemicals' to achieve. How long will these chemicals persist in the environment and in our bodies and how
long will their impact be felt?

The potential impact on the profits of the 'chemical' industry should not be our concern.

Thank you,

Sincerely,

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