

## Contaminants from the AltEn Plant in Mead, Nebraska – Risks to Humans & Wildlife

By John Schalles, Professor of Biology, Creighton University  
Member of the UNMC Mead Investigative Team and the Perivallon Group

- Waste seed (corn, soybeans, other crops) used to produce ethanol at the AltEn Plant contain systemic pesticides as seed coatings for protecting plants that germinate from treated seeds.
- Typically, these protective seed coatings contain both neonicotinoid insecticides (neonics) and fungicides, and color dyes as warnings to never be consumed by humans or put in animal feed.
- Systemic pesticides are generally water soluble, thus readily absorbed by plant roots, and transported to stems, leaves, flowers, seeds, and fruits and nuts. This solubility enables these pesticides to more easily transport in surface and ground waters and to enter food chains.
- Neonics, globally the most widely used insecticide, effectively poison the nicotinic acetylcholine receptors and nervous system signaling of insects, leading to rapid death.
- The AltEn ethanol fermentation process did not destroy these seed coat pesticides, but some fractions became metabolites (residues with altered chemistries). Different seed coating pesticides and their metabolites thus formed a toxic, highly concentrated “witches brew.”
- Massive amounts of semi-solid “wet cake” (distiller’s grains) from fermentation were stored, on site. This product, as well as liquids stored in large, open lagoons and tanks, contain very high levels of pesticides and metabolites, which have leached and leaked into soils and streams.
- AltEn mixed this toxic wet cake with soil and applied it to local farmland as “soil conditioners” or converted wet cake by pyrolysis into a biochar product (which failed to break down the pesticides). Wet cake piles and waste lagoons generated noxious, and likely toxic, air emissions.
- Large amounts of AltEn derived pesticides now contaminate soils, waterways, and probably groundwater onsite and in areas surrounding and downstream of AltEn and treated farmland.
- Field exposure studies and lab experiments have found lethal and non-lethal effects of neonics for humans, fish, and wildlife, and especially insects, including bees and butterflies.
- Among diverse vertebrates, including humans, neonics exposure can cause: **nervous system impairment and brain development abnormalities, behavioral abnormalities, embryo death, low birth weights, short or longer-term damage to major organs (esp. lungs, heart, and liver), endocrine and immune system disruptions, reduced fertility, genotoxicity, and cellular oxidative stress. Younger individuals are generally at greater risks. [see attached references]**
- Much less is known about (1) long-term effects on humans, (2) non-target toxicity of seed coating fungicides, (3) toxic, synergistic interactions of different seed coating pesticides and their metabolites, (4) environmental transport and half-lives in soils, sediments, and surface and ground waters, (5) biological community and whole-ecosystem effects, and (6) effects of time-cumulative, chronic exposures.

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