



August 12, 2020

Mr. Brian Moore
Director of Emergency Response
PA Department of Environmental Protection

Dear Mr. Moore,

It has come to our attention that a spill of SuperGel-X fluid has occurred at a lake and that additional assurances as to the safety of our product are required. We can offer information showing that SuperGel-X is a non-hazardous product that should not significantly impact either the spill-site or the lake into which the SuperGel-X slurry spilled. In order to bolster this claim, CETCO points to both our published safety data sheets and Canadian Directive 50 testing that was performed on SuperGel-X.

SuperGel-X is a dry blend of only two ingredients, bentonite and an anionic bentonite extender-type polymer. Bentonite is a non-soluble material and the polymers used to extend it would be preferentially bound to soil surfaces and the bentonite platelets themselves. Bentonite is considered to have very low mobility in soils for this reason and the SDS states this too. Spills will not pose a long-term environmental hazard, but may be a slippage hazard while slurry is present on-site and wet. Bentonite does not form any harmful byproducts upon oxidation and is GRAS or generally regarded as safe for human use and even consumption. Bentonite is a naturally occurring clay mineral and is used in agriculture, cosmetics, landfill-lining, medicines and even food. Bentonite is known to be able to help sequester pollutants from groundwater or other liquids. The bentonite used in CETCO SuperGel-X is effectively identical to the clay used in kitty litter and has been used for decades in the treatment of wastewater.

The extending polymer that is used in our SuperGel-X product is from a class of polymers generally referred to as sodium polyacrylate. These polymers are commonly used in agriculture to hold water in soil and suppress dust as well as showing up in a countless number of cosmetic and home-care product formulations such as sunscreen and shampoo. Like bentonite, sodium polyacrylate is even approved for food-use in certain instances. When exposed to sunlight, these polymers will quickly oxidize to harmless CO₂ and short-chain fragments that can biodegrade further.

Looking at the SDS, we see that under section 12, Ecological Information (see included), we note that the EC50 and LC50 values for SuperGel-X are listed as below:

EC-50 Freshwater algae = >100mg/L at 72 hours
EC-50 Daphnia = >100 mg/L at 48 hours
EC-50 Freshwater fish = 16000 mg/L at 96 hours

These values are all considered extremely high allowable concentrations and would suggest that CETCO SuperGel-X is a relatively benign product. I would additionally note that the volume of water into which the spill occurred is estimated at 8 billion gallons. A spill of 8000 gallons into a volume of water this large would represent 0.0001% or 1 ppm. Any effect on daphnia would be primarily based on viscosity rather than on anything toxic in the drilling fluid. Daphnia EC-50 values are going to be limited by the concentration at which they are no longer able to swim. The freshwater algae EC-50 values would likewise be limited not by harmful chemicals, but rather by simple turbidity that would decrease light penetration into water. These effects would be quickly decreased by dilution, both in terms of inflow of new water and dispersing into the larger body of the lake.



In order to sell our products into many governmental jobs in Canada, it was necessary to go through very stringent testing protocols for "Canadian Directive 50" compliance. This testing includes both microtox testing and heavy-metals analysis. CETCO SuperGel-X has passed all of the requirements of this testing and is considered safe enough to use in environmentally sensitive jobs where this Directive 50 testing is required. A copy of this Canadian Directive 50 testing data has also been included for your information.

Because of the reasons laid out above, it is the well-reasoned belief that CETCO SuperGel-X will not significantly harm the environment. As noted in the SDS, clean-up efforts for spills should include "Prevent further leakage or spillage if safe to do so. No special environmental precautions (are) required". The effects of dilution and rain events will be sufficient to remove any residual SuperGel-X that remains onsite after initial spill mitigation.

Please feel free to contact either myself or Michael Kleespies, General Manager - Drilling, North America with any questions or further concerns.

Yours truly,

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