

Dupont – Washington Works – C8 Project

NOTES from Site Inspection

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10:00 a.m. – 3:00 p.m.

Met with Chris Shoop (on-site environmental) and Debbie Mulrooney (corporate modeler)

- C8 is brought to the facility in "totes" and is then transferred to larger tanks
- The "tote" is a square plastic container which holds approx. 300 gallons and with dimensions approx. 4.5' x 4.5' x 4.5'.
- The tote contains C8 dissolved in water (20% C8 by weight).
- It is unloaded into the larger container by connecting sealed couplings between the tote and the process tank.
- It costs them between \$16 - \$20 / gallon currently and has been increasing in cost because of decreasing availability.
- The C8 used to be made and handled as a powder, but this was changed as ? became aware of the health risks associated with handling it in this form.
- C8 is manufactured in Minnesota by 3M. It is used by competitors to make similar products to Teflon in Alabama and New Jersey.
- Dupont has been looking into the possibility of manufacturing the C8 for themselves due to the decreasing supply and increased cost of the C8. They had looked into making it at Washington Works, but seemed to have ruled it out in favor of a location in Fayetteville, North Carolina.
- The ammonium ion disassociates with the carbon chain as the C8 is heated and dried
- C8 particles are 0.1 to 0.3 microns in diameter (possibly less on the lower end, 60% passed to bottom glass fiber filter.
- The smaller the product, the more C8 required in the process

The largest source of C8 emissions is the process covered under permit R13-815D. (Stack T61FCE) The products are FP1, FP2, and FP3 (powder or small granular?). This permit includes 3 process lines (?) which interchangeably "batch" produce one of the three products at a time depending on demand. FP1 is the original product, FP2 results in the same basic product as FP1, but yields

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more product by adding more C8. FP3 is a smaller product and uses the most C8 in the process. FP3 accounts for about 20% of production. They are permitted for worst case, i.e. producing the most FP3 possible (they can't produce FP3 on one of the three lines).

After the batch is mixed, the product is dried to remove the water and this is where the C8 and ammonium disassociate. The product is then run through a scrubber (temp. max 230 deg. F) under normal operation (it can be bypassed) to recover C8. The product is then (proposed to be?) passed through a bank of eighteen "candle filters" and is then vented through the 18 separate stacks. The liquid containing excess C8 from ?(scrubber, decanters, candle filters) is recovered and reverse osmosis is performed to take the water out and recover C8. Some of the recovered C8 is re-used in the process and some is sent back for recycling (facility gets a discount when they buy it back).

They do not know the phase of the C8 emissions coming out of this source (vapor or particulate) it has to do with Ph, and temperature. The Carbon chain "reassociates" with the ammonium as the temperature is reduced in the scrubber.

Chris Shoop stated that the scrubber has been shut down at times.

Special Note: About 40% of the shipped product from these units is not run through the dryer and sold as a powder product like the rest. The product solution from the reactor is removed and "separated" (let the solids settle and skim off the water). Therefore this product is shipped out with the C8 still in there. Mr. Shoop did not know what happens to it once it is sold.

STACKS

There are two tall buildings, which were not accounted for in the model as of yet. The tallest of which has a stack, which terminates about 1' below the structural steel (approx 110' above grade level).

The by-pass stack for the process described above, vents about 5' in elevation below the top of the large barrels of the candle filter bank (18 barrels with 1' stacks arranged in 2 rows of 9. Effectively should be modeled as a building)