

Monsanto

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DATE December 28, 1976
SUBJECT CEA 3246 - St. Louis Area Incinerator
REFERENCE Dow Midland Visit - 12/8/76
TO File

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On December 8, 1976 Messrs. R. M. Kountz, W. A. Kuhn and I visited the Dow Midland, Michigan facility to observe their incineration operation.

Hydroscience personnel present were:

Ken Honeycut - Manager of Knoxville office
Dimitri Jeon - Manager of New Business
Rudy Novak - Manager of Technology Group
Dick Sawinski - Senior Project Manager

The Dow facility handles a variety of incinerable wastes to say the least. The existing facility consists of two separate incineration units. The initial unit has been in service for some 20 years and is used as a standby only. The new unit, a third generation design, has been in operation since 1975.

This unit consists of a 60M BTU/hour kiln and a 30M BTU/hour secondary combustion chamber.

The kiln was simultaneously being fed a variety of solid wastes (i.e. cardboard, broken pallets, empty fibre-paks, carbon paper), solids/sludges in drums and waste liquids. Waste liquids were also being burned in the secondary

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combustion chamber. Their present operation disposes of approximately 500,000 gallons/month of liquid wastes and 1000 drums/month of solids/sludges. They were feeding a drum every 4 minutes (15 drums/hour) while we observed operations. Rate of feeding drums will depend on heat release while burning. The rubbish being fed to the kiln was used as an "impact cushion" as the drums were automatically kicked down the steel brick-lined feed chute.

The brick-lined kiln is 13 feet in outside diameter X 35 feet long. Brick life was estimated by the operations supervisor as follows:

- Front end (5 years)
- Middle half(3-5 years)
- Discharge end(2-3 years)

The operations supervisor indicated the discharge end brick life was erratic and definitely related to installation techniques (i.e. the better the installation, the longer the brick life).

On-stream time for the operation was 90+%. This OST may not include scheduled downtime of 2 - 3 weeks each December for turnaround maintenance. They apparently had an explosion earlier in the year and this resulted in about 2 weeks of downtime on the unit. The 90% figure ignores the explosion downtime.

Fuel oil was used as a heat-up/back-up source. Operations indicated that less than 10,000 gallons of fuel oil were burned per year. In fact, energy usage for the operation

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has been cut in half since start-up!

Scrub water was sent to a plant-wide treatment system and returned. Hydrosience was made well aware of our need for closed-loop scrub water. They have designed two units now operating this way: A new facility for Eastman Kodak and a revision to an existing public incinerator in southeast Oakland County.

Manpower for Dow's incinerator was composed of one (1) operating supervisor, one (1) foreman, one (1) clerk, and thirteen (13) hourly personnel. The incinerator is on a 24 hour/day, 7 day/week operation. Shift schedule is 7 and 2. The crane operator who feeds rubbish to the front end is on a 5 and 2 schedule.

Dow's drum storage area is very small and while they didn't come right out and say it, their philosophy on disposal of drummed wastes was, "get rid of it, don't accumulate."

Apparently, each department within the overall plant has a Waste Coordinator. The responsibility of identification, containerization and minimization of wastes rests with this person. In my opinion, we will need a similar type organization in our facilities.

Hydrosience stresses flexibility. What wastes they thought they were going to incinerate are not what they are actually incinerating. They mentioned that they are

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presently incinerating multi-ring aromatics, amines, phenolics, nitrated compounds, phosphorus compounds and chlorinated materials. They gave us only two tips in combining our liquid wastes (we are doing both):

1. Segregate good fuels.
2. Segregate aqueous streams to the extent you can feed them in properly.

While Hydrosience indicated that we should look at heat recovery, when questioned about successes, etc., they indicated we'd be better off without trying it. They do not utilize energy recovery and since energy recovery would be a fully integrated system, troubles with the energy recovery area would mean troubles with incineration of wastes. Primary objective - burn wastes, leave space for future heat recovery when it becomes feasible.

When we explored the need for a "test burn" with them, they indicated that anything from a pilot to full-scale test may be in order. Data on heat release and burn rate, (which affect refractory and gas rate design) on selected wastes may be meaningful for design and certainly for operation purposes. A full-scale, 2-3 day test burning a composite of our wastes would be the most meaningful test. We were left with the impression that Hydrosience will not run a test burn unless it needed to develop data for design or operation purposes. In other words, they take a lot of risk running tests in Dow's unit and if data on a

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waste is available from their history bank, they'll use the bank.

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