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Hazardous Waste Listing Determination for Inorganic Chemicals Industry Wastes (Final Rule)

Volume V:
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Inorganic Chemical Manufacturing Listing Determination
(Proposed September 14, 2000)

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Comment ICMP-L0006, Cookson, August 24, 2001

Comment L0006 -1: Cookson appreciates the opportunity to meet with EPA regarding the impact of the above-referenced proposed hazardous waste listing on the blast furnace slag at Cookson's former facility in Laredo, Texas. As we discussed in our meeting and as presented in our prior comments, notwithstanding the Agency's investigation of the antimony oxide industry, the administrative record is inadequate to include the blast furnace slag at Cookson's former facility in the listing for the following reasons:

The blast furnace process is different. The blast furnace process which generated the slag at the Laredo facility is the different from the processes studied by EPA. This blast furnace processed antimony-bearing ores to produce the intermediate products processed at the facilities studied by EPA in this rulemaking. The blast furnace also differs significantly from the reduction furnace at the Montana facility, operating at much higher temperatures, in an oxidizing state and is much more aggressive in removing antimony from the process inputs.

Response L0006-1: See our response to comment 28-2.

Comment L0006-2: The slag is very different. The Laredo blast furnace slag leaches, on average, seven times less antimony (via TCLP analysis) than the waste stream evaluated by EPA, and at a maximum, leaches ten times less than the levels utilized by EPA in its risk assessment which concluded that the slag required listing. The blast furnace slag leaches virtually no arsenic and lead, in contrast to the wastestreams evaluated by EPA. Finally, the raw ore-fed blast furnace process results in a much higher volume of slag, at a much lower toxicity, than is generated from the other processes EPA is seeking to regulate. Congress has made it clear that it does not intend to regulate these types of high volume, low toxicity wastes.

Response L0006-2: See our response to comments 28-2, L5-5a and L5-5b. Wastes from antimony oxide production including wastes from the blast furnace are not covered by the RCRA Bevill exclusion which addresses high volume, low toxicity wastes from mining beneficiation and extraction operations or specifically identified mineral processing wastes.

Comment L0006-3: EPA's risk assessment is inapplicable. EPA's rulemaking risk assessments should at least attempt to be representative of typical waste management scenarios. EPA readily admits that because of the extremely high dilution attenuation factor ("DAF"), high geologic permeability, and excessive leaching characteristics of the wastes studied, the conclusion that antimony oxide slags should be regulated resulted from modeling a relatively abnormal situation. The geologic conditions near the Laredo facility are significantly different than those considered by EPA. Our earlier comments provided additional details regarding the differing conditions.

Response L0006-3: See our response to comment L5-5a and L5-5b. Note that the conditions found at the U.S. Antimony site where we conducted our modeling for the waste favored lower risks due to the extremely large DAFs found at the site. The fact that we still found risk from the site given the large DAF suggests that other sites that have more typical hydrogeologic parameters could have even greater risks.

Comment L0006-4: Recovery of antimony from the slag is not viable. Many of the recycling options outlined in the proposed rule are not viable with respect to the Laredo slag. First, EPA identifies BDAT for this waste as high temperature metals recovery. The blast furnace slag is the result of high temperature metals recovery of the slag studied by EPA, yet EPA continues to regulate the material. Further, the rulemaking assumes that, to minimize the costs of disposal, the regulated material will be recycled in active operations for further antimony recovery. These assumptions are not valid for the blast furnace slags, which have already undergone this recovery. In addition, the remediation scenarios that EPA suggests (e.g. closure in place, Corrective Action Management Units) may not be available to Cookson for this waste pile since they no longer own the facility which produced the wastes.

Response L0006-4: See our response to comment L0005-1 regarding the recycling, clean-up and cost issues and response to comment L0005-2 regarding BDAT. Our analysis assumed that Cookson would use the slag as roadbed rather than close or cleanup the pile in place.

Comment L0006-5: Costs of the rulemaking are underestimated. The Laredo slag constitutes well over 90% of the material that will likely be subject to this rulemaking over the next thirty (30) years. The omission, of the costs to handle this slag, therefore, casts doubt upon EPA's economic impact projections that appear to justify the environmental benefits of the rulemaking in relation to the costs to the regulated community. While EPA states that it considers the cost estimates provided by Cookson for disposal of its slag excessive, these costs are realistic given available management options.

Response L0006-5: See our response to comment L5-1.

Comment L0006-6: Cookson agrees that any one of these factors may not, in and of itself, tip the balance against application of this regulation to the Laredo material. However, in the aggregate these factors call into question the sufficiency of the administrative record to include the blast furnace slag in the current rulemaking.

Further, as we discussed in our meeting, the material generated by Cookson has been present at the Laredo site in an uncontrolled condition for over 70 years without resulting in any off-site groundwater impacts. Consequently, we can safely assert that for the vast majority of waste that would be subject to this rule, existing state regulatory restraints are adequate to protect human health and the environment. In fact, the closure of the slag pile at the Laredo site is already subject to oversight and approval by the Texas Natural Resource Conservation Commission.

Response L0006-6: See our response to comment 28-4. Cookson supplies no support for its claim that constituents leaching from its site have had no impact on ground water off-site. Thus, we cannot evaluate this claim. We note, however, that Cookson has informed us that ground water underlying its site is nonpotable. If off-site groundwater is similarly nonpotable, monitoring may be sparse or non-existant.

Comment L0006-7: An additional issue that may be important in determining the scope of the proposed rule is how the listing may be applied to material that would previously meet the listing definition but has been recycled prior to the effective date of the waste listing. Specifically, Cookson requests that you in the administrative record for this rulemaking that non-hazardous waste material that is beneficially reused and recycled, and the recycled product is applied to the land (in this case as aggregate bound up in asphalt) prior to the effective date of the listing will not subsequently be subject to this specific listing definition. That is, if the recycled product (asphalt) is manufactured and used prior to the effective date, and is then managed (e.g., excavated during utility construction or road repairs) at some point in the future, the product of the recycling will no longer satisfy the listing definition (i.e., "slag from antimony oxide production") and would not be subject to regulation as a listed waste. EPA staff expressed a belief that this was the Agency's interpretation of this issue, however, clarification of this interpretation on the record would be extremely useful in completing the beneficial management of the slag.

Again, Cookson appreciates the opportunity to meet with EPA and to provide these additional comments in the administrative record.

Response L0006-7: See response to comment L0019.

Comment ICMP-L0007, E.I. du Pont de Nemours, February 16, 2001

Introduction

Thank you for the opportunity to meet with you and your staff on January 12, 2001 to discuss DuPont's major concerns with the September 14, 2000 Inorganic Chemical Manufacturing Waste listing proposal's impacts on DuPont's titanium dioxide manufacturing facilities. In his letter to you of January 25, 2001 our outside counsel John Quarles provided a summary of all the major topics we discussed at that meeting. This letter is intended to follow up on one specific very important issue that vas covered in that discussion.

During the meeting you expressed interest in gaining a better understanding of Delaware's existing regulatory program controlling the use and marketing of Iron Rich™ produced at our Edge Moor Plant, and your staff asked about the impact of this regulatory program on possible out-of-state use of Iron Rich™. We met with staff of the Delaware Department of Natural Resources and Environmental Control (DNREC) on January 23 to clarify our understanding of these issues. The DNREC meeting, along with review of our files and discussions with others involved in the DNREC use and marketing program serves as the basis for this letter.

At the outset, I want to comment that the information we have received indicates that the current Delaware regulatory program does not provide as comprehensive a review and control, as we previously had understood to be the case. However, this is understandable because Delaware has considered the Iron Rich™ as industrial material that DuPont was trying to use for beneficial reuse purposes. Delaware's program also does not provide any direct legal prohibition against transportation of material out of state, although DuPont has no intention of such action under any circumstances. I understand that John Quarles has already communicated these conclusions to you in a telephone conversation. We understand that Delaware intends to strengthen its regulatory controls in this area, and we plan to work closely with them to support such improvements in their regulatory framework. At the same time, we recognize that EPA would not be able to rely on controls not yet in place. Later in this letter we will address that aspect more specifically, but first we want to present to you information we have gathered with respect to the existing Delaware program.

Comment L0007-1: Existing DNREC Use and Marketing Regulatory Program

Section 2C(6) of Delaware Regulations Governing Solid Waste provides an exemption for the recycling of solid wastes into specific market applications. This exemption requires written approval from the Department (i.e.. DNREC) prior to commencing such recycling. Such approval is contingent upon a successful demonstration by the petitioner that there is an available market for the recycled material. Further, since being amended in March 1999, this exemption has also required submission of a written operating plan describing the types and quantities of materials to be used, the method and manner of processing, and a description of the product that will be produced.

In the past DuPont has submitted basic environmental and geotechnical information on Iron Rich^{TM} to DNREC via our agent, VFL Technology Corporation. This information included the results of the following:

- physical property testing (water content, consistency, particle size distribution),
- engineering property tests (compaction, strength erodibility, and permeability),
- TCLP analysis of Iron Rich^{TM} for all Toxicity Characteristic constituents, and
- additional TCLP analysis of Iron Rich" for the 12 Appendix VIII metals as well as vanadium and zinc.

This information demonstrated that Iron Rich^{TM} was suitable for planned uses, that Iron Rich^{TM} would not be classified as a Toxicity Characteristic waste, and that Iron Rich^{TM} met Universal Treatment Standards (UTS) for all UTS metals.

In the course of seeking approval for more extensive use and marketing of Iron Rich^{TM}, VFL has submitted results of the following types of more comprehensive testing to DNREC on behalf of DuPont:

- total composition analysis for volatile organics
- total composition analysis for semivolatile organics,
- total composition analysis for ICP metals and mercury,
- TCLP analysis for all Toxicity Characteristic constituents,
- pesticide and PCB (Arochlor) analysis,
- physical property testing (moisture, Atterberg limits, grain size, and specific gravity), and
- engineering property testing (compaction, shear strength, permeability, consolidation, and erodibilitv).

These tests confirmed that Iron Rich^{TM} would not be classified as a Toxicity Characteristic hazardous waste and, in conjunction with field demonstration projects, demonstrated that Iron Rich^{TM} would be an effective substitute for soil in planned uses.

Response L0007-1: EPA thanks DuPont for this additional information. However as noted in our response to comment 22-7d-2, since the submission of this comment, due to company concerns regarding the potentially high levels of dioxins and furans in the Iron Rich^{TM}, DuPont does not plan to market the Iron Rich^{TM}, as it is currently formulated, for use as a soil substitute. In addition, the company is taking necessary precautions to mitigate potential off-site releases of the material.

Comment L0007-2: Possible Out-of-State Iron Rich^{TM} Use

During the January 12 meeting, one of your staff asked about the impact of Delaware's use and marketing regulatory program on possible out-of-state use of Iron Rich™. One of my colleagues replied that he thought Delaware regulations require solid waste generated in Delaware be handled in Delaware. This statement was based on 7 Del. Code, Chapter 64, Section 6406(a)(31). This statutory provision grants the Delaware Solid Waste Authority the specific power to "control, through regulation or otherwise, the collection, transportation, storage and disposal of solid waste".

However, based on discussion with DNREC on January 23, we now understand that DNREC does not assert authority over material subject to the use and marketing regulatory program in case such material is used out of state.

Nonetheless, market forces limit how far Iron Rich™ would be transported for planned use and DuPont plans to restrict the use of currently generated Iron Rich™ to locations in the specific industrial corridor adjacent to the Edge Moor Plant, as described in section 7 of our November 13, 2000 comments and in the January 15, 2000 groundwater modeling report.

<u>Response L0007-2</u>: EPA thanks DuPont for the clarification of the DNREC code. See our response to comment 22-7d-3 for EPA's position on the transportation issue.

<u>Comment L0007-3</u>:

<u>Revised DNREC Use and Marketing Regulatory Program</u>

During our meeting with DNREC on January 23, we learned that DNREC is planning upgrades to its use and marketing regulatory program. DuPont understands that DNREC is currently evaluating additional criteria that could be used in approving or disapproving requests for the use and marketing exemption.

<u>Summary and Proposed Approach</u>

While we believe that the existing Delaware program provides a significant level of environmental protection, DuPont also is supportive of efforts to strengthen these regulatory requirements. We also believe, given the composition and characteristics of the material involved, the location and nature of the sites where it has been managed, and the methodology and safeguards that have been employed with respect to its use, that the level of concern associated with DuPont's past, current, or planned future use and management of this material should be minimal. Nonetheless, we recognize that EPA may have concerns as to whether existing practices provide sufficient environmental protection and in particular whether appropriate environmental safeguards are adequately enforceable.

DuPont desires to work cooperatively with EPA in an effort to satisfy and resolve any reasonable concerns you may have with respect to this matter. We appreciate the efforts EPA already has undertaken to develop a more thorough analysis of the scientific and technical issues concerning this material and the assessment of risks potentially associated with its management. We also believe that mechanisms are available or can be developed to provide sufficient assurance as to the enforceability of appropriate and necessary management practices. I understand that John Quarles has already had a preliminary telephone discussion with you regarding our interest in pursuing this approach. We have asked John to follow up with you to make arrangements for more substantive discussions, and I expect that John will be communicating with you directly in the near future for that purpose, recognizing the tight time deadlines that govern your deliberations on these regulatory matters.

DuPont appreciates the Agency's consideration of all this information as work on the listing progresses. We are interested in working with members of your staff to resolve any issues related to the information in this letter or in our previously submitted comments.

Response L0007-3: EPA thanks DuPont for the additional information on the DNREC program. As noted above and in our response to comment 22-7d-2, DuPont has indicated that they no longer intend to market Iron Rich^{TM} as currently generated. Therefore, the management issues described above are no longer relevant to this rulemaking. See our response to comment 22-8c regarding the enforceable agreement approach.

Comment ICMP-L0008, E.I. du Pont de Nemours, March 8, 2001

Comment L0008-1: EPA Request for Supplemental Information with respect to January 15, 2001 Modeling Analysis Submission Docket Number F-2000-ICMP-FFFFF

During and subsequent to our February 23, 2001 meeting on groundwater modeling for Iron Rich^{TM} produced at the DuPont Edge Moor plant as follow-up to DuPont's November 13, 2000 comments on the Inorganic Chemical Manufacturing Waste proposed rule and the supporting January 15, 2001 groundwater modeling report and thallium K_d study submission, the Agency made several requests for supplemental information concerning the groundwater modeling report and the thallium K_d study. As we discussed on March 6, DuPont is providing responses to the thallium K_d study requests first and sending responses to the modeling/hydrogeology requests early next week via Federal Express. Please place a copy of this letter and the attachment in the RCRA Docket as appropriate.

Your supplemental information requests related to the thallium K_d study are repeated below and are the same as items 10 through 13 in the supplemental information request that accompanied your February 27, 2001 electronic mail message.

a. Description of exactly how the Du Pont soil samples were prepared prior to analysis in the Centre Labs K_d study (item 10)

b. Has Du Pont conducted K_d studies on thallium for any other soil samples and, if so, what were the results of those studies? (item 11)

c. An explanation of the reason why phase 2 of the Centre Labs K_d study was done with a more dilute soil solution ratio (2 g to 100 mL) than used in the phase 1 study for the Baptistown, New Jersey and Donna, Texas soils (item 12)

d. The clay content and silt content of the dredge spoils in the Cherry Island area (item 13)

Additionally, when you and I spoke on February 2, 2001, I recall your asking the question below concerning about the thallium K_d study. While I gave you a general answer to this last question at that time, I have included a more complete response based on input from my colleagues as part of this submission.

e. What was the basis for selecting the soils tested in the study?

Responses to these five requests are presented in the attached WORD document.

DuPont is interested in working with the Agency to improve methods of considering adsorption of metals in the subsurface dependent on metal concentration and other factors as part of performing groundwater modeling to better model metals transport in the

subsurface. To this end, we would welcome the opportunity to discuss potential further experimental studies
with EMRAD.

Response L0008-1: EPA thanks DuPont for the additional information. See our responses in comment sets 22 and L-4 for our discussion on groundwater issues.

Comment ICMP-L0009, E.I. du Pont de Nemours, March 13, 2001

Comment L0009-1: EPA Request for Supplemental Information with respect to Jan. 15, 2001 Modeling Analysis Submission - Part 3 - Docket Number F-2000-ICMP-FFFFF

During and subsequent to our February 23, 2001 meeting on groundwater modeling for Iron Rich^{TM} produced at the DuPont Edge Moor plant as follow-up to DuPont's November 13, 2000 comments and the supporting January 15, 2001 groundwater modeling report and thallium K_d study submission, the Agency made several requests for supplemental information concerning the groundwater modeling report and the thallium K_d study.

The requests related to the thallium K_d study (items 10-13) were addressed in an electronic mail message to you on March 8, 2001. Information in response to the items 1-9 and item 14 in your February 27 electronic mail message were addressed as Part 2 in a March 12, 2001 submission delivered to you on March 13 via Federal Express.

Additional EPACMTP Monte Carlo simulations in response to comments made at the February 23 meeting are being transmitted herein as Part 3 of DuPont's responses to your February 27 electronic mail message. GeoTrans reports on a way to ensure physically consistent data to overcome the previously discussed incompatibility in saturated zone flow modeling by limiting the infiltration/recharge as a percentage of the gradient-driven flux. Using this flux-limiting approach and very conservative (yet more appropriate) inputs for thallium partition coefficients results in dilution attenuation factors (DAFs) for thallium of 70 and higher for a Monte Carlo simulation over the same region that EPA considered in modeling for the proposed rule.

These simulations are summarized in the attached report from GeoTrans (supplementary CMTP Monte Carlo.pdf). Also provided is a zip file (Tables 1-3 model input files.zip) containing the input files used by GeoTrans as well as the edited source code (edited as described in Appendix A of the March 2001 GeoTrans report) and the executable file. We did not include the input files corresponding to EPA's original Monte Carlo runs.

Also attached is a zip file (HE deterministic runs with higher K.zip) containing input files associated with EPACMTP simulations for higher conductivity values discussed in the March 12, 2001 submission in response to item 1 of your February 27 electronic mail message.

Furthermore, Harris Labs has today sent us a laboratory report ("Dupont Soil C Report.xls") that includes the information requested in item 13 of your February 27, 2001 electronic mail message. This report is attached as an Excel spreadsheet in the form it was received from Harris Labs today. The Harris Labs data for the dredge spoils further indicates that Baptistown, New Jersey soil in the Centre Labs study is representative of the dredge spoils in the Iron Rich^{TM} Industrial Corridor.

Please place a copy of these submissions in the RCRA docket as appropriate.

Response L0009-1: EPA thanks DuPont for the additional information. See our responses in comment sets 22 and L-4 for our discussion on groundwater issues.

Comment ICMP-L0010, E.I. du Pont de Nemours, March 12, 2001

Comment L0010-1: EPA Request for Supplemental Information with respect to Jan. 15, 2001 Modeling Analysis Submission - Part 2 Docket Number F-2000-ICMP-FFFFF

During and subsequent to our February 23, 2001 meeting on groundwater modeling for Iron Rich^{TM} produced at the DuPont Edge Moor plant as follow-up to DuPont's November 13, 2000 comments and the supporting January 15, 2001 groundwater modeling report and thallium K_d study submission, the Agency made several requests for supplemental information concerning the groundwater modeling report and the thallium K_d study.

The requests related to the thallium K_d study (items 10-13) were addressed in an electronic mail. message to you on March 8, 2001. Information in response to the items 1-9 and 14 in your Feb. 27 electronic mail message are addressed herein as Part 2 [note: see docket for Part 2]. Three copies of the requested information are enclosed. Please place a copy of this submission in the RCRA Docket as appropriate.

Additional EPACMTP Monte Carlo simulations in response to comments made at the February 23 meeting are being transmitted via electronic mail for your receipt on March 13 as Part 3.

Thank for your consideration of this information.

Response L0010-1: EPA thanks DuPont for the additional information. See our responses in comment sets 22 and L-4 for our discussion on groundwater issues.

Comment ICMP-L0011, E.I. du Pont de Nemours, April 16, 2001

Introduction

As we discussed on April 3, DuPont has analyzed six samples of Iron Rich™ produced at its Edge Moor plant for dioxin and determined an average value of 1.15 ppb WHO-TEQ (as is). Based partly on a screening level assessment using these results, DuPont has decided to discontinue placing newly generated Iron Rich™ on land at its Cherry Island Staging Area by May 7, 2001, and to take steps to better manage the material already at Cherry Island. The screening-level assessment is outlined below, as are future plans pertaining to this matter.

As I noted to Ms. Elizabeth Cotsworth after the close of our meeting on April 3, I am sending a copy of this letter to your team's risk assessment resource, David Layland. I am also sending a copy to Ms. Nancy Marker of the Delaware Department of Natural Resources and Environmental Control (DNREC).

Comment L0011-1: Dioxin Analysis

The calculated average WHO-TEQ value (l. l 5 ng/kg) was based on analysis of six samples of Iron Rich™ via EPA Method 1613, with results ranging from 0.309 ng/kg to 3.32 ng/kg on an as-is basis (i.e., wet weight). The corresponding average solids content for these samples was 44% over a range of 39.6% to 47%.

The calculated average WHO-TEQ value corresponds to 2.61 ng/kg on a dry basis. The low value corresponds to 0.69 ng/kg on a dry basis, and the high value corresponds to 7.06 ng/kg on a dry basis. Dry basis values were used in the screening assessment where appropriate.

Setting

As detailed in the GeoTrans modeling report in DuPont's January 15, 2001 groundwater modeling submission, DuPont currently has approximately 500,000 tons of Iron Rich™ staged over 22.7 acres on its Cherry Island property. This staging area is in an industrial setting on property adjacent to the Delaware River and Shellpot Creek. The staging area is set back from the River by at least 50 meters and from the Creek by at least 30 meters.

Pathways of Exposure

Based on review of the setting, the screening assessment was limited to the most significant pathways as follows:

- Stormwater runoff into the Delaware River and

- Dust suspension from uncovered pile of Iron Rich™ and dry deposition of wind blown dust into the Delaware River and Shellpot Creek.

The prevailing wind in this area is toward the Delaware River. Wet deposition of windblown dust was not modeled since any dust migration during wet weather events would be expected to be via stormwater runoff rather than via windblown dust.

Since the area of interest for Shellpot Creek is downstream of the sluice gate (used to manage tidal variation of the Creek caused by tidal fluctuation in the Delaware River), Shellpot Creek and the Delaware River were modeled as part of the same water body for this screening assessment.

Stormwater Runoff

Stormwater runoff from the Iron Rich™ staging area is routed through a concrete sump, which serves as a settling device minimizing solids in the permitted stormwater discharge to the Delaware River. (Stormwater runoff from the closed landfill cells at Cherry Island is directed to Shellpot Creek and is not included in this assessment.)

Prior measurement of suspended solids in the stormwater discharging from the concrete sump indicated a non-detect at a detection limit of 9 mg/L. Based upon an area of 22.7 acres, an annual rainfall of 45 inches, and assuming suspended solids in the runoff at the detection limit of 9 mg/L, the runoff suspended solids loading on the river from the staging area is estimated to be 2100 lb/vear.

Dust Suspension and Deposition

The estimated amount of Iron Rich™ deposited on the Delaware River and Shellpot Creek was computed by first estimating the amount of Iron Rich™ suspended in the air via wind erosion and material handling. A dispersion/deposition model was then used to estimate the amount of suspended material that might deposit into the modeled water body.

Estimated dust suspension via material handling (truck dumping, truck traffic, bulldozer movement) of moist Iron Rich™ in the active portion of the staging area was computed in accordance with AP-42 (Compilation of Air Pollutant Emission Factors, 5th edition, EPA, 1998).

Estimated dust suspension via wind erosion of Iron Rich™ in the inactive portion of the staging area was computed in accordance with the methodology described in Chapter 5 of Methodologyfor Assessing Health Risks Associated with Multiple Pathwavs of Exposure to Combustor Emissions (EPA NCEA, December 1998).

Estimated annual average deposition of estimated suspended Iron Rich™ dust particles onto the modeled water body was computed using the Industrial Source Complex Short Term (ISCST) dispersion and deposition model.

Dry deposition modeling (with plume depletion) predicts that the majority of the off-site deposition of dust particles is to the Delaware River and Shellpot Creek. The estimated total dust deposition onto the modeled water body computes to 41,000 lb/year over an affected area of 1.59 km^2, reaching out 1000 meters into the River.

Estimated Impact on Delaware River and Shellpot Creek

Combining the estimated runoff and the estimated deposition solids loadings yields an estimated total particle loading of 43,100 lb/year into the modeled water body from the Iron Rich^{TM} staging area. Based on information presented in Table 3 of the draft report Wasteload Allocations for Volatile Organics and Chronic Toxicity for Point Sources Discharging to the Delaware River Estuary (Delaware River Basin Commission, March 1998), the harmonic mean flow of the Delaware River at this point along the river is 8850 cu. ft/sec. Since the Delaware River is approximately 3000 meters wide in the vicinity of the staging area and the deposition is estimated across one third of the river, one third of this harmonic mean flow was used to estimate Iron Rich^{TM} particle concentration in the water. The resulting estimated Iron Rich^{TM} total particle concentration in the modeled water body is 7.4 micrograms per liter (ug/L). This estimated particle concentration and the estimated total particle loading on the modeled water body can be used with the high, low, and average WHO-TEQ concentrations cited above to conservatively estimate WHO-TEQ loadings and total WHO-TEQ concentrations as listed below.

WHO-TEQ concentration in Iron Rich^{TM}	Estimated WHO-TEQ loading to modeled water body		Estimated WHO-TEQ total concentration in modeled water body	
average	51.0	mg/yr	1.9 x 10^{-8}	ug/L
low	13.5	mg/yr	5.l x 10^{-9}	ug/L
high	138.l	mg/yr	5.2 x 10^{-8}	ug/L

The Delaware River Basin Commission (DRBC) water quality criterion for 2,3,7,8 - tetrachlorodibenzodioxin for freshwater fish consumption applicable to the River in this vicinity (zone 5 above the Delaware Memorial Bridge) is 1.4 x 10^{-8}ug/L (Water Quality Criteria for Toxic Pollutants for the Delaware River Estuary: Basis and Background Document, DRBC, May 1995, p.8 and p. 22). The conservatively estimated WHO-TEQ concentrations in the modeled water body are above the DRBC water quality criterion for the average and high concentrations and less than the DRBC water quality criterion for the low concentration.

Alternatively, conservatively assuming the entire estimated WHO-TEQ loading for the average WHO-TEQ concentration in Iron Rich^{TM} settles into the sediment over the 1.59 km^2 atmospheric deposition area and a 10 cm sediment bioturbation layer, the estimated sediment WHO-TEQ concentration is computed to be 0.3 ng/kg. Using this sediment concentration estimate, a biota sediment accumulation factor of 0.3 (per EPA's Interim Report on Data and Methods for Assessment of 2,3,7,8-Tetrachlorodibenzo-p-dioxin Risks to Aquatic Life and Associated Wildlife, EPA/600/R-93/055, 1993), and a 3% default lipid content in fish, the estimated WHOTEQ concentration in fish tissue is computed to be 0.13 ng/kg. Using the 17.5 g/day DRBC default freshwater fish consumption rate and the human intake methodology of EPA's Risk Assessment Guidance for Superfund, the estimated fish tissue concentration equates to a conservatively estimated incremental risk of 2.1 x 10^{-6} via fish consumption. However, fish advisories along the Delaware River from the Delaware state line to the C&D Canal advise against consuming all fin fish species, thus limiting fish consumption in this area.

DuPont Plans

While refined modeling may indicate lower estimated concentrations of WHO-TEQ in the water body and in the fish, DuPont is moving forward with plans to prevent further potential deposition of Iron Rich^{TM} into the Delaware River and Shellpot Creek via wind erosion. To that end, DuPont will apply a spray-on biodegradable temporary cover material over the Iron Rich^{TM} at the Cherry Island staging area within the next few days as soon as weather conditions allow, DuPont plans to meet again with DNREC Waste Management officials on April 23, 2001 to continue working with the State to arrange environmentally-sound final disposition of the material staged at Cherry Island. Additionally, as noted above, DuPont will discontinue placing newly generated Iron Rich^{TM} at the staging area by May 7, 2001, which will require certain infrastructure changes and State regulatory approvals.

DuPont plans to work with DNREC's Office of Water Resources to appropriately address any water quality issues associated with the Iron Rich^{TM} staged at Cherry Island as it moves forward in NPDES permitting for the Edge Moor facility.

As we discussed on April 3, DuPont has discontinued efforts to market currently generated Iron Rich^{TM} and does not plan to market Iron Rich^{TM} generated in the future until it has completed technical programs to significantly reduce dioxin levels in accordance with product stewardship requirements.

We have begun an aggressive program to identify the source of dioxin in our manufacturing process and to develop methods to significantly reduce dioxin levels in Edge Moor coproducts and TiO2 manufacturing solids at all sites.

DuPont is committed to addressing EPA's concerns regarding dioxin and metals associated with the management of Iron Rich^{TM} produced at the Edge Moor plant. As we address these technical concerns, we welcome the opportunity to engage EPA in further discussion to resolve these issues in a mutually acceptable manner. DuPont is hopeful that EPA will agree that environmental protection is best served by the Agency not finalizing a traditional listing for Iron Rich™ or other TiO2 manufacturing solids being evaluated by EPA by working with us as we take appropriate steps to address the concerns raised.

<u>Response L0011-1</u>: EPA thanks DuPont for the additional information. EPA notes that DuPont's decision to discontinue marketing Iron Rich™ and to refrain from adding more of this material to the onsite staging area makes it even more appropriate to evaluate off-site disposal practices for DuPont's ferric chloride solids. The suggestions for a conditional listing that DuPont made in earlier comments are no longer relevant.

Comment ICMP-L0012, E.I. du Pont de Nemours, March 26, 2001

Introduction

This letter is in follow-up to our phone discussion Tuesday, March 6. You asked about Iron Rich™ being too light for use by the Delaware Solid Waste Authority (DSWA) for use as landfill daily cover. Additionally, Ms. DiPietro asked why the daily cover demonstration at the DSWA stopped and if the attachments to the Julv 27, 1999 VFL submission to DNREC needed to be maintained as proprietary. I am hopeful this letter along with the attachments satisfies the Agency's request to release CBI information and concerns regarding utilization and marketability of DuPont's Iron Rich™. This letter is also intended to supplement my February 15, 2001 letter to Elizabeth Cotsworth wherein I described the type of information that DuPont has submitted to DNREC pursuant to the DNREC use and marketing program.

Comment L0012-1: Iron Rich™ Use as Landfill Daily Cover

Attached are letters from Greggo and Ferrara Contractors and DSWA [see docket for attachments]. As the June 11, 1996 letter from Greggo and Ferrara indicates, stabilized Iron Rich (mixture of Iron Rich™ and fly ash) performed well as daily cover material at the DSWA landfill. Based on discussions with VFL, we are confident that the "too light" comment was in reference to some other material marketed by VFL and not in reference to Iron Rich™. In the more recent letter from DSWA, DSWA confirms that it has evaluated the use of Iron Rich™ through trial operations and considers the daily cover and berm construction applications appropriate for Iron Rich™. As the letter notes, DSWA's continuation of the use of Iron Rich™ is contingent upon DNREC's approval.

Use of 5000 tons of Iron Rich™ at the DSWA landfill in 1996 stopped at the end of the trial period approved by DNREC. With our agent, VFL, we were in the process of obtaining approval for a second round of trial use (10,000 tons) at the DSWA landfill in 1999, when DNREC interrupted use of Iron Rich™ pending resolution of whether Iron Rich™ would become subject to hazardous waste regulations.

Iron Rich™ Market and Volume

DuPont's November 13, 2000 comments, as corrected via the January 15, 2001 submission of the groundwater modeling report, indicate the following available markets for the use of Iron Rich™

Customer	Annual Use	Application
Army Corps of Engineers	60,000 T/yr.	Berm (COE/DSWA Cherry Island)
Army Corps of Engineers	20,000 T/yr.	Berm (Harbor South)

Delaware Solid Waste Authority	20,000 T/yr.	Daily Cover (DSWA landfill)

The 3007 submission, dated May 27, 1999, that the Edge Moor Plant provided the Agency estimates annual ongoing production of Iron Rich^{TM} on page 000007 in the range of 120,000 to 140,000 tons.

The apparent volume discrepancy between the 100,000 T/year of ongoing production discussed in the February 23, 2001 review of the January 15, 2001 modeling report and the 120,000 to 140,000 T/year is accounted for by noting that the higher values including wastewater sludge and are based on a higher than current manufacturing facility production rate.

<u>Response L0012-1</u>: EPA thanks DuPont for the additional information on uses of Iron Rich^{TM}. As noted in our response to comment 22-7d, this information is no longer relevant to the rulemaking since DuPont has since the company has decided not to pursue efforts to market the Iron Rich^{TM} material, in its current composition, as a soil substitute or soil amendment. DuPont officials indicated that data collected by DuPont and subsequent risk screening analyses show that the Iron Rich^{TM} contains dioxin and furans at concentrations of concern.

<u>Comment L0012-2</u>:

CHERRY ISLAND STAGING AREA CLOSURE

As indicated in the November 13, 2000 comment submission and in the January 15, 2001 modeling report, DuPont would like to leave the staged material on our Cherry Island property in place after implementing appropriate closure activities. We envision capping and vegetating the area. We are planning further work with DNREC to revise the plan for closing the staging area that we had submitted to Mr. Robert Hartman of DNREC on January 29, 1999 to work out the details of appropriately closing the staging area with the Iron Rich^{TM} currently there left in place.

VFL DOCUMENTATION

The VFL documentation you referred to: Mr. Jonathan Bacher of VFL to Ms. Nancy Marker of DNREC dated July 27, 1999 can be considered non-CBI. However, to put the document into the proper context we request that you consider that we are in the process of evaluating the total composition data point for thallium included in this VFL document. We are concerned that this thallium data point is so much higher than the total conposition values that EPA obtained from the September 7, 1999 sample, which itself is so much greater than the thallium analytical results for our October 2000 sampling program. We are in the process of better defining what may be variability in thallium content in our raw material ore. Nonetheless, while the total composition content of thallium in Iron Rich^{TM} may vary, we are confident that Iron Rich^{TM} will be shown to continue to meet the 0.20 mg/1. TCLP value for thallium in the Universal Treatment Standards. Variable thallium content in the raw material ore is a similar situation to the variable constituent concentrations in raw materials that led EPA to propose a conditional listing for dyes and pigments. DuPont continues to be interested in discussing and developing with the Agency alternate regulatory mechanisms in lieu of a K178 final listing.

DuPont appreciates the Agency's consideration of this information as work on the listing progresses. We are interested in working with you to resolve any issues related to the information in this letter or in our previously submitted comments.

Response L0012-2: EPA thanks DuPont for the additional information. Regarding alternative regulatory mechanisms, see responses 22-8a and 22-8c.

Comment ICMP-L0013 (and ICMP-L0015 identical comment), E.I. du Pont de Nemours, January 25, 2001

Background

I am submitting this letter to you on behalf of DuPont with respect to the September 14, 2000 proposed rules identified above and in particular issues raised by them that would affect titanium dioxide production facilities utilizing the Chloride-Ilmenite Process. On behalf of all of us who represented DuPont in the meeting at your offices on January 12 on this subject, I want to reaffirm our appreciation for that meeting and to thank you and your colleagues for the thoughtful consideration of these matters in light of the extremely tight time pressures that you emphasized regarding the court imposed deadlines on EPA to complete this rulemaking process.

We thought it might be helpful, especially in light of your tight schedule, for us to submit this follow-up letter to highlight the major topics that we discussed. The purpose of this letter is not to present additional information regarding any of these matters but rather to provide a succinct outline of the major issues that we believe need to be addressed and a summary of the principal factors that, in our view, must be reflected in the resolution of those issues. We hope this will be helpful to you and your staff in organizing your analysis and decisionmaking on these issues.

Introduction

At the outset of the meeting, we emphasized that the Listing as proposed would have severely negative impacts on DuPont. This results primarily from two factors.

These factors are: (1) the proposal to list as hazardous waste an unspecified and inseparable fraction of the Bevill-exempt coke and ore solids that are attributable to an in-process purification stream that the proposal considered to be a "vanadium waste"; and (2) the proposal to list wastewater treatment sludges, based on data and management assumptions derived for the DuPont Edge Moor facility's Iron Rich^{TM} co-product. As described below, these two factors cause substantially greater economic impacts to DuPont than were projected by the proposed rule. Further, they place DuPont at a significant disadvantage relative to DuPont's competitors that manage their materials in a comparable fashion and generate similar wastes using the Chloride Process.

Comment L0013-1: ECONOMIC AND FAIRNESS CONCERNS

A. Economic Impacts

We pointed out that the analysis of economic effects developed by EPA's contractor as part of the rulemaking proposal grossly underestimated what the actual impacts will be. EPA estimated that the incremental cost for the chloride-ilmenite titanium dioxide sector to comply with the regulation as proposed would be less than $3 million per year. DuPont's analysis shows that although a variety of factors might drive such costs either higher or lower the actual costs of compliance would most likely be in excess of $300 million per year. There are three principal reasons for the extraordinary variance between the EPA projections and those of DuPont, as follows:

1. The EPA contractor assumed that the total solids generated by the three DuPont chloride-ilmenite facilities amount to only 66,000 metric tonnes, whereas the actual volume of solids generated that would be subject to management as hazardous wastes under the proposed regulation exceeds 1,000,000 metric tonnes.
2. The EPA contractor assumed that only 10% of the solids generated -assumed to equal 6,600 metric tonnes -- would have to be subjected to additional special management/treatment as a result of being classified as hazardous waste. DuPont's analysis shows that the total amount of solids requiring such management/treatment would approximate 315,000 metric tonnes.
3. EPA's analysis apparently assumed that no incineration of the regulated material would be required. In any event the economic analysis made no allowance for any costs of incineration. By contrast, DuPont's understanding of the applicable regulatory requirements is that incineration clearly would be required, causing an enormous additional increment of cost.

Each of these three factors naturally has a powerful multiplier effect on total costs. As indicated above, various factors may affect actual costs. In particular, certain opportunities may exist -- or may become available over time -- that would permit a partial reduction in the costs impacts through engineering redesign of the production process. It is unlikely, however, that any such redesign could be effectuated by the anticipated date when the proposed regulations will go into effect. Moreover, serious engineering uncertainties preclude assurance that any such changes would be feasible even at later dates. As a result, even making maximum allowance for feasible future engineering change, it is clear that the EPA analysis totally mischaracterizes the economic impacts that would result from the proposed regulation.

B. Improper Regulatory Distinction Between Chloride Process and Chloride-Ilmenite Process Titanium Dioxide Facilities

In the past, EPA has treated chloride and chloride-ilmenite facilities in the same manner with respect to regulation of waste material. That is significant, since both types of facilities operate within an integrated market for titanium dioxide product. In the proposed listing, however, EPA has separated the two types of facilities into different categories and proposed fundamental differences in regulatory treatment. Notwithstanding the substantial discretion that EPA properly may exercise in designating categories and subcategories of industrial operations for regulation with respect to listed hazardous wastes, the differential treatment is improper in this case because it is not supported by meaningful differences in the nature or concentration levels of contaminants in, or the management of, the waste streams of chloride process and chloride-ilmenite process facilities. In particular, we emphasized two important points, as follows:

1. The proposed regulation would treat as hazardous waste a portion of the Bevill-exempt coke and ore solids attributable to the Purification Recycle stream generated by the chloride-ilmenite process facilities. The proposal, however, would impose no such regulatory effect with respect to chloride process facilities even though those facilities in essence have the same design with respect to this element of their process and there is no relevant difference in the content of material in those streams between the chloride-ilmenite and chloride facilities.

2. In conducting risk analysis of possible adverse impacts that might arise from the management of non-wastewater solids in general, EPA has relied heavily on the assumption that certain solid material from the chloride-ilmenite facilities would be managed offsite (as currently occurs at one of the three chloride-ilmenite facilities) to support a determination that listing of such material as a hazardous waste is proper. By contrast, EPA has assumed that no offsite management scenario would exist with respect to similar material from chloride process facilities. There is no basis for that assumption. Indeed, DuPont has submitted evidence in Attachment 2.1 of its earlier comments that in fact offsite management has occurred and/or continues to occur at at least three chloride process facilities.

The practical effect of EPA's miscalculation of economic impacts, combined with the discriminatory treatment between chloride-ilmenite process and chloride process facilities, will significantly disrupt the relative competitive economics between different components of what is for practical and business purposes a single integrated market. Such consequence would be justifiable if based on real differences in environmental effect. Since it appears that such differences do not in fact exist, EPA should avoid establishing a discriminatory regulatory treatment.

Response L0013-1: See our response to comment 22-10 a-d regarding the economic issues above. For the proposed rule, EPA did not model incineration costs for K178 residuals because we believed that organic hazardous constituents that could have required incineration were found primarily in the Bevill component of the Iron Rich^{TM} mixture. Incineration costs were assessed and presented in the proposed Economic Analysis in the Appendix providing sensitivity analysis. For how we are evaluating incineration costs for the K178 listing in the Economic Analysis, please refer to our response to 22-10a. See our response to comment 22-2a for our position on our evaluation of the chloride vs. chloride-ilmenite facilities.

Comment L0013-2: THE PURIFICATION RECYCLE STREAM

As we emphasized at the meeting, the status of the purification recycle stream and its effect on the listing of Bevill-exempt coke and ore solids is of critical importance to DuPont. Like all of the Chloride Process titanium dioxide producers, DuPont's Chloride-Ilmenite Process has always recycled this stream. The purification stream contains extremely valuable concentrations of titanium tetrachloride that have not been fully extracted from the ore, coke, and metal chloride matrix during the initial purification of titanium tetrachloride to 99.9% pure intermediate product. In fact, titanium tetrachloride comprises 92-97% of the purification recycle stream, and the titanium recovered from this stream represents 10-20% of the annual titanium dioxide production from these facilities.

We discussed at the meeting and reiterate briefly below the three legal reasons why recycling this in-process stream to extract the remaining titanium tetrachloride should not provide a basis for listing any portion of the Bevill-exempt coke and ore solids. Although we trust that you will agree with us on this point, and that we need not devote significant additional DuPont or Agency resources to addressing this issue, it is of such importance that we would appreciate hearing from you as soon as possible regarding how this issue will be resolved.

- The Purification Recycle Stream Is Not Solid Waste And Should Not Cause a Portion Of The Bevill-Exempt Coke and Ore Solids Stream to be Listed.

The purification recycle stream is an in-process mineral processing stream that is recycled to the initial process that generates it in order to further extract valuable titanium tetrachloride. The stream is never discarded and thus is not a solid waste. Therefore, it cannot be classified as a hazardous waste. Instead, it is recycled without exposure to the environment for further processing to extract additional raw materials, by returning it to the condenser where crude gaseous titanium tetrachloride from the reactor is initially separated from coke and ore solids.

Because it is not discarded, the purification recycle stream cannot legally be considered a solid waste. Because it is not solid waste, using it as an ingredient should not in any way affect the characterization of coke and ore solids as fully Bevill-exempt mineral processing wastes. For this reason, the Agency should not have proposed to list any portion of the coke and ore solids attributable to the purification recycle stream.

We also point out that recycling the stream does not pose any significant risks to the environment. That appears to be recognized in the proposed decision not to list the stream prior to its return to the process. The recycle stream contains 3-8% solids, which are comprised of the unreacted ore matrix, coke solids, and reacted metal chlorides from the ore matrix (including vanadium chloride and iron chloride). Recycling does not significantly affect the composition of the Bevill-exempt coke and ore solids or iron chloride solids that are removed from the condenser and subsequently separated, since only a tiny fraction of that material is derived from the purification recycle stream. For this reason, the Agency should not be concerned about any input of constituents from the purification recycling stream to the Bevill-exempt solids.

Recycling the stream to the condenser has the advantage of using existing heat from the reactor to vaporize the recycle stream. This conserves energy that would otherwise be required to vaporize the stream prior to further extraction in the condenser. At the same time, it reduces the need to cool the hot reactor gases in the condenser with additional materials during separation of coke and ore solids from the titanium tetrachloride vapor. Recycling the purification stream to the condenser area has always been performed (predating the 1976 enactment of RCRA) because of the need to recover the valuable titanium and the need to assure high purity from distilling titanium tetrachloride. Although it may be theoretically feasible to separately process the purification stream to further extract titanium tetrachloride, there is no currently demonstrated technology (much less a technology that could be adopted and made operational by the time a listing became effective) that could do so, either by running the distillation process for a longer time frame or by purifying the recycling stream separately.

Response L0013-2: As discussed in response to comment 22-3a-2, we have concluded that the solids derived from the vanadium stream, when they exit the condenser with the coke and ore solids, are exempt mineral processing wastes. Our listing does not apply to these exempt wastes.

Comment L0013-3:

B. The Proposal Would Improperly Revisit Prior Bevill Determinations.

In the proposed rule, the Agency indicated that it would not revisit its prior Bevill determinations. In our comments, DuPont cited to the numerous instances where the Agency made prior Bevill determinations that treated the entire corpus of coke and ore solids as Bevill exempt, with full knowledge of the recycling of the purification recycle stream. We therefore believe that the proposal contradicts the Agency's stated intent not to revisit these issues. In any event, as discussed above, we believe that the Agency was correct in its prior determinations, because the purification recycle stream is not a solid waste and should not cause any of the coke and ore solids to fall outside of the Bevill exemption. All of the coke and ore solids from DuPont's chloride-ilmenite process meet the regulatory language for Bevill exemption as "Chloride process waste solids from titanium tetrachloride production."

C. The Proposal Is Inconsistent With the Co-processing Provisions of the Phase IV LDR Rule.

As discussed in DuPont's comments, even if the purification recycle stream were considered a solid waste, it should not affect the Bevill-exempt status of the coke and ore solids. This is because the Agency determined that co-processing of mineral processing secondary materials along with raw material feedstocks would not affect the Bevill-exempt status of wastes so long as the secondary materials comprised less than 50% of the feed. Here, the purification recycle comprises only a small fraction – certainly far less than 50% – of the total feed to the process. Co-processing the purification recycle stream thus should not affect the exempt status of the coke and ore solids, and because they were fully exempt no fraction of those solids should have been proposed for listing.

Response L0013-3: See our responses to comment 22-3a-2 regarding the Bevill issue and comment 22-3b-2 regarding the Phase IV co-processing issue.

Comment L0013-4: EPA SHOULD NARROW THE PROPOSED K178 LISTING

A. The Proposed Listing Should Exclude Wastewater Treatment Sludges.

The only data in the docket for the proposed rule regarding wastewater treatment sludges from the chloride-ilmenite process was a single sample collected from the Hillside Pond at DuPont's New Johnsonville, Tennessee facility. Although this wastewater treatment sludge data was evaluated and considered to pose no risks warranting listing on a site-specific basis, the data was not evaluated using reasonable worst-case risk modeling. Had EPA done so, such modeling would have demonstrated that wastewater treatment sludges do not pose any unacceptable risks due to manganese or thallium, which were proposed as the basis for listing. This is because: (1) of these two constituents only manganese was present in the sludge SPLP extract above a health based level (HBL); and (2) the minimum dilution and attenuation factor (DAF) for manganese determined by EPA in any of its landfill modeling analyses in the proposal was 7, whereas manganese was present at only 2.7 times the HBL. Based on the data in the record for the proposal, the Agency should have excluded wastewater treatment sludges from the broad proposed listing of "nonwastewaters."

However, the Agency included wastewater treatment sludges in the listing based on data from one other sample, taken from the Iron Rich™ at DuPont's Edge Moor, Delaware facility. Although Iron Rich™ contains up to 10% solids from wastewater treatment, it is principally composed of Bevill-exempt coke and ore solids. Iron Rich™ is not wastewater treatment sludge, and its composition is significantly different from wastewater treatment sludge. Thus, the data on Iron Rich™ should not be used as a basis to list wastewater treatment sludges.

The data submitted by DuPont to EPA during the comment period confirm that there is no basis to list wastewater treatment sludges. DuPont sampled each of the six distinct wastewater treatment sludge streams at the three facilities, as well as Iron Rich™. The SPLP analyses demonstrated that none of these wastewater treatment sludge streams warrant listing for manganese or thallium, the constituents on which the proposed listing is based. The highest concentration of manganese identified was 3.4 times the HBL in the New Johnsonville equalization pond sludge. This is still less than half the concentration that would provide a basis for listing, even using the conservative assumptions that the modeling for the proposed listing employed. None of the wastewater treatment sludge SPLP samples exceeded the HBL for thallium. Thus, EPA is fully justified in excluding wastewater treatment sludges from the proposed nonwastewater listing.

Response L0013-4: The final listing does not include the wastewater treatment solids. See our response to comment 22-5d-1 for more detailed discussion.

Comment L0013-5: The Rule Language Should Track Exclusions Proposed In The Preamble.

In the proposal, the Agency clearly expressed an intent to exclude specific types of "nonwastewaters" from the scope of the listing. However, the proposed regulatory language does not contain any exclusions, but rather uses broad language that could apply to streams the Agency evaluated for listing but stated its intent not to list. In any final K178 listing, the Agency should only list the specific streams it intends to list, and at a minimum should add language to the rule that expressly excludes streams the Agency intends to exclude. Specifically, the Agency should exclude from the rule language the following materials that the preamble indicates were not intended to be covered by the listing: wastewaters (including wastewaters containing solids that have not yet been separated) (65 FR 55763-65); additive vent filter solids (65 FR 55765); off-specification TiO_2 (65 FR 55765); and railcar/trailer washout (65 FR 55766). In addition, the Agency should exclude ferric chloride solids generated prior to any chemical processing, which are Bevill-exempt (65 FR 55760).

Response L0013-5: See our response to comment 22-5b. The Agency notes that the final listing language has been modified to only include residuals from ferric chloride manufacturing from acids formed during the production of titanium dioxide using the chloride-ilmenite process. Therefore, the commenter's concern from the proposal language is now moot.

Comment L0013-6: Technical Concerns With EPA's Risk Assessment and Modeling of Iron Rich^{TM}' That Formed the Basis for Proposing to List Nonwastewaters.

The proposal to list nonwastewaters was based on risk modeling performed on the Iron Rich^{TM} from DuPont's Edge Moor facility. We stated several concerns with how this risk analysis was performed. Individually and cumulatively, these concerns substantially question the basis articulated by the Agency for proposing to list nonwastewaters from the chloride-ilmenite process.

1. We believe the Iron Rich^{TM} thallium leachate data EPA obtained represents a laboratory artifact. None of the samples obtained by DuPont from wastewater treatment sludges contained SPLP thallium concentrations at such high levels. Instead, the data demonstrate that there is essentially no leachable thallium present in these samples.
2. As explained more fully in Section 7.3 of the DuPont comments, we believe the HBL and reference dose (RFD) proposed for evaluating manganese was established using a modifying factor of 3 that is not supported by the scientific literature and that should not be used. The final rule should use an HBL of 2-3 mg/1.
3. We have several technical concerns regarding the groundwater modeling performed for the proposal. "These include: a need to consider additional site-specific

factors; and a need to preserve the correlation between correlated parameters. Each of these factors has an order of magnitude effect on the DAF. Collectively they would suggest a DAF that is orders of magnitude less conservative than the levels employed by the Agency in the proposal.

We would like to meet with your staff to discuss these technical issues as soon as is feasible.

Response L0013-6: See our response to comments 22-5a-1 through 22-5a-4 regarding the presence of thallium in DuPont's waste. See our response to comments 22-7d-6 through 22-7g regarding our groundwater modeling. We are deferring action on manganese. Please see section IV.B of the preamble.

CONCLUSION

Finally, as a conclusion it may be most helpful to provide a listing of the critical points on which the comments submitted by DuPont and highlighted in this letter present basic differences in analysis and conclusions from those set forth in the EPA listing proposal. In presenting these differences, which we believe will be useful as a checklist of issues that EPA should address, we will revise the order of points to state them in a manner that may be more helpful for your purposes of analysis, as follows:

1. Thallium -- The data obtained by EPA and submitted by DuPont indicates that thallium is not present in wastewater treatment sludge streams generated by the chloride-ilmenite process at levels sufficient to support any regulatory action.
2. Manganese -- Manganese also should be disregarded since the leachable concentrations of manganese found also do not warrant or justify any regulatory action for wastewater treatment sludge. This is particularly true if a proper dilution and attenuation factor (DAF) is applied.
3. Risk Assessment Modeling -- EPA should reevaluate its risk assessment to eliminiate inappropriate assumptions and conclusions.
4. Iron Rich™ -- No samples of Iron Rich™ should be used to support regulatory determinations with respect to wastewater treatment sludges, since the dominant component of Iron Rich™' material comprises coke and ore solids exempt under Bevill.
5. Wastewater Treatment Sludges -- EPA should exclude wastewater treatment sludges from the proposed listing, based on the technical points stated above.
6. Purification Recycle -- EPA should also, under any circumstances, exclude material attributable to the purification recycle stream since (a) the recycle stream is not solid waste, (b) all of the coke and ore solids are exempt under Bevill, and (c) those solids would also be exempt under the co-processing provisions of the Phase IV LDR Rule.
7. Other Exclusions -- EPA should also explicitly exclude the specific streams which the September 14, 2000 preamble stated that EPA did not intend to include -- namely, wastewaters, additive vent filter solids, off-specification $Ti0_2$, railcar/trailer wash out, and ferric chloride solids generated prior to any chemical processing.

8. Equal Treatment for Chloride-Ilmenite Process and Chloride Process Facilities -- In the event that, contrary to the conclusions stated above, EPA might conclude that it should list certain waste streams from the chloride-ilmenite process facilities as hazardous waste, it should list corresponding streams from chloride process facilities, because no reasonable basis exists to support differential regulatory treatment between those comparable sectors of the titanium dioxide industry.

9. Economic Analysis -- Because of the vast discrepancies pointed out by DuPont, EPA must revise its economic analysis to more accurately assess the cost impacts of this proposed listing.

10. Final Result -- Based on the points stated above and the comments submitted by DuPont, EPA should amend its proposed rulemaking of September 14, 2000 to exclude all manufacturing wastes from chloride-ilmenite process facilities.

Recognizing that the time is extremely tight for resolution of the numerous issues presented by this proposed rulemaking, DuPont desires to cooperate with EPA in reaching resolution of the issues presented in the most expeditious manner possible. We believe that objective would be advanced by further discussions in the near future of the overall analysis to identify which questions require significant further deliberation. We also recognize that at our meeting on January 12 you and your staff raised a number of questions concerning specific issues, and we will submit our response on those issues in the very near future. We would be pleased to pursue further discussion with EPA on this subject in whatever manner would be most helpful from your viewpoint. Thank you again for your consideration of these extremely important questions.

Response to Conclusion: See the responses to DuPont's original submission (comment set 22) for our response to the issues listed above. See also section IV.B of the preamble regarding our decision to defer all manganese-related actions.

Comment ICMP-L0014, Eastman Chemical, September 25, 2001

Comment L0014-1: Eastman Chemical Company submitted comments on the 9/14/2000 proposal to list as hazardous certain waste streams in the inorganic chemicals industry. While not a part of that industry, our concern was associated with the naming of manganese as a constituent of concern and adding it to Appendix VIII and the UTS table at 40 CFR 268.48. Though EPA did not include in its analysis any cost impacts on facilities outside the inorganic chemical industry, we felt that we could be significantly impacted, though we did not have the data needed to determine such impacts. We stated in our comments that "It will take time for Eastman and other companies to generate the needed data to determine the impacts of manganese regulation." We have further information to provide you at this time on the impacts at just one of our facilities. Other Eastman facilities may be impacted as well.

* The level of manganese in the groundwater we monitor exceeds statistical local background levels, so we would have to add manganese to the analytical requirements in our RCRA permit. Relevant code is 40 CFR 264.93 and 264.94.

* Because manganese is so benign in drinking water, there is only a secondary drinking water standard, based on taste, odor or appearance, of 0.05 mg/L. There is no primary drinking water standard, so no acceptable value for manganese is currently listed in Table 1 of 264.94.

* We would need to conduct an expensive risk assessment in order for the state regulatory authority (the Commissioner of Environment and Conservation) to establish an alternate concentration level (264.94 (b)) for the manganese. Because the toxicity levels for manganese are so high, this demonstration can be readily conducted, but it will require a full Class 3 permit modification (40 CFR Part 270.42, Appendix I, C.5.), as well as a well-presented demonstration, review, response to comments, etc.

* Modification of the RCRA permit and related activites will cost an estimated $80,000, based on past experience.

* Manganese would have to be added to the list of chemicals for which we conduct regular analyses, also adding expense.

* Because many states pattern their solid waste management regulations on the hazardous waste management regulations, it is likely that manganese would be added to groundwater monitoring requirements at RCRA nonhazardous industrial solid waste landfills. Certainly if manganese is of such concern to justify its listing as a hazardous waste constituent in Appendix VIII, it would be reasonable that EPA would be "duty bound" to add manganese to the 40 CFR 258, Appendix II list of inorganic and organic hazardous constituents applicable to municipal solid waste landfills. Certainly the addition of

manganese to Appendix VIII of the hazardous waste regulations would appear to be sufficient reason for EPA or other citizen groups to insist that it be added to MSW regulations with extensive associated costs, considering the large number of MSW landfills across the nation.

We urge the Agency to not add managanese to Appendix VIII. I was able to list in our comments package a number of reasons/citations demonstrating the low toxicity of manganese. But basically, manganese in drinking water is not considered a health hazard--the secondary drinking water standard is based only on aesthetic concerns. Ingested manganese has rarely been associated with toxicity, because of a low absorption rate, with its daily intake and output basically equivalent. Manganese resembles iron and zinc in having a low order of toxicity in mammals and birds. Noncontaminated soils have a mean level of 380 ppm manganese in the western U.S. and 260 ppm in the eastern U.S., but can range up to 7,000 ppm. Nuts, whole-grain cereals, dried legumes and tea contain greater than 20 ppm manganese. Twenty commercial detergents had an average of 87 ppm, ranging from 40-175 ppm. The list goes on and on, but all demonstrate the ubiquitous presence of manganese in soils, food and the human body as well as the low toxicity of this element.

We hope this additional information will help you understand the cost impacts on facilities outside the inorganic chemical industry, with no resultant health or environmental benefits. Thank you, and please call if you'd like to discuss this issue further.

Response L0014-1: We are deferring final action on all elements of our proposal that are specifically related to the waste constituent manganese. Please see section IV.B of the preamble to today's final rule for a further discussion of our decision to defer final action on manganese-related elements of the proposed rule.

Comment ICMP-L0016, E.I. du Pont de Nemours, April 27, 2001

Comment L0016-1: Edge Moor Iron Rich Staging Area Screening Assessment Unit Correction

The letter Edge Moor Iron Rich Staging Area Screening Assessment that was sent on April 16, 2001 had an error in the nomenclature used for units. The calculations and results are accurate and do not change.

Corrections made:

Original Letter:

Dioxin Analysis

The calculated average WHO-TEQ value (1.15 ng/kg) was based on analysis of six samples of Iron Rich™ via EPA Method 1613, with results ranging from 0.309 ng/kg to 3.32 ng/kg on an as is basis. The corresponding average solids content for these samples was 44% over a range of 39.6% to 47%.

The calculated average WHO-TEQ value corresponds to 2.07 ng/kg on a dry basis. The low value corresponds to 0.69 ng/kg on a dry basis, and the high value corresponds to 7.06 ng/kg on a dry basis. Dry basis values were used in the screening assessment where appropriate.

Revision:

Dioxin Analysis

The calculated average WHO-TEQ value (1.15 micrograms/kg or 1.15 ug/kg) was based on analysis of six samples of Iron Rich™ via EPA Method 1613, with results ranging from 0.309 ug/kg to 3.32 ug/kg on an as-is basis (i.e., wet weight). The corresponding average solids content for these samples was 44% over a range of 39.6% to 47%.

The calculated average WHO-TEQ value corresponds to 2.61 ug/kg on a dry basis. The low value corresponds to 0.69 ug/kg on a dry basis, and the high value corresponds to 7.06 ug/kg on a dry basis. Dry basis values were used in the screening assessment where appropriate.

Response L0016-1: EPA thanks DuPont for providing the corrected information.

Comment ICMP-L0017, E.I. du Pont de Nemours, May 8, 2001

Introduction

During our April 3, 2001, meeting with the EPA Office of Solid Waste, DuPont discussed several changes being made to the DuPont TiO2 facility in Edge Moor, Delaware. As you know, the Edge Moor facility has been identified as a producer of ferric chloride for sale and has concerns regarding the current and future regulatory status of solids from ferric chloride production as set forth in the September 14, 2000, proposed rule (65 FR 55684).

Agency concerns included product storage in a surface impoundment and the addition of chlorine in a manner more closely resembling chemical processing then mineral processing for purposes of evaluating RCRA Bevill applicability. The facility is addressing these major areas of concern through the actions set forth below, which include exiting ferric chloride product storage in a landbased surface impoundment, developing a closure plan for this storage unit with DNREC as part of a Conciliatory Agreement, installation of ferric chloride product storage tanks and piping upgrades to a relocated chlorine injection facility.

This letter outlines these changes so the Agency can better understand the actions taken by DuPont that may mitigate the necessity for the inclusion of ferric chloride solids in a final listing determination. Since many of the changes are being completed to better align the operation with the Agency's interpretation of Bevill as presented in the proposed rule we would like to meet with you to insure the changes accomplish just that.

Currently the Delaware facility has five (5) different environmental projects that are in varying stages of implementation, all have completed basic design and plan to move ahead for capital funds approval in the next few weeks. These projects are:

o Relocation of chlorine addition to the Ferric Chloride process line (currently relocated: needs to be made permanent)
o Relocation of chemical addition to the Ferric Chloride process line
o Ferric Chloride surface impoundment closure
o Ferric Chloride Product Storage Tanks installation
o Wastewater treatment sludge
  - Relocation of process sumps separating out Bevill exempt solids
  - Isolation of Wastewater sludge from Iron Rich^{TM}

Comment L0017-1: Relocation of Chlorine Addition to the Ferric Chloride Process Stream:

As was presented in the November 13 submission of DuPont's comments to the proposed K178 Hazardous Waste Listing, DuPont does not agree with the agency's reinterpretation of Bevill for the ferric chloride solids that are subjected to the addition of chlorine for the sole purpose of converting very small amounts of ferrous chloride to ferric chloride. Though we disagree with the Agency's conclusion, we are in the process of making permanent the chlorine addition point relocation to minimize the amount of Bevill exempt solids subjected to chlorine addition.

Figure 1 represents how the addition of chlorine was performed prior to 2001 when temporary facilities were installed. In Table I the Agency can see that solids are not created by the Chlorine addition.

Figure 1

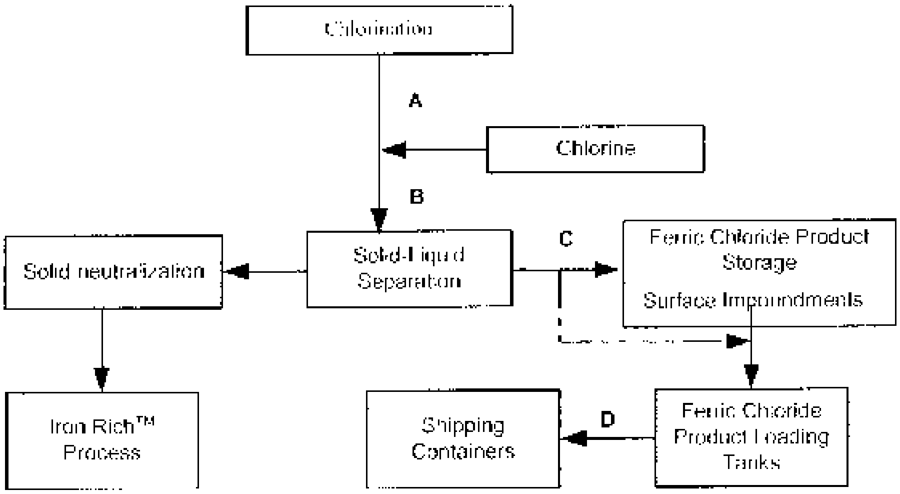

Table 1			
Approximate Wt.% of Solids in the Ferric Chloride Solution			
A	B	C	D
1.5	1.5	0.1	<0.2

Figure 2 represents how chlorine addition is currently taking place after relocation to a point after solids/liquid separation. Table 2 represents the approximate solids loading in the liquid ferric chloride process stream.

Figure 2

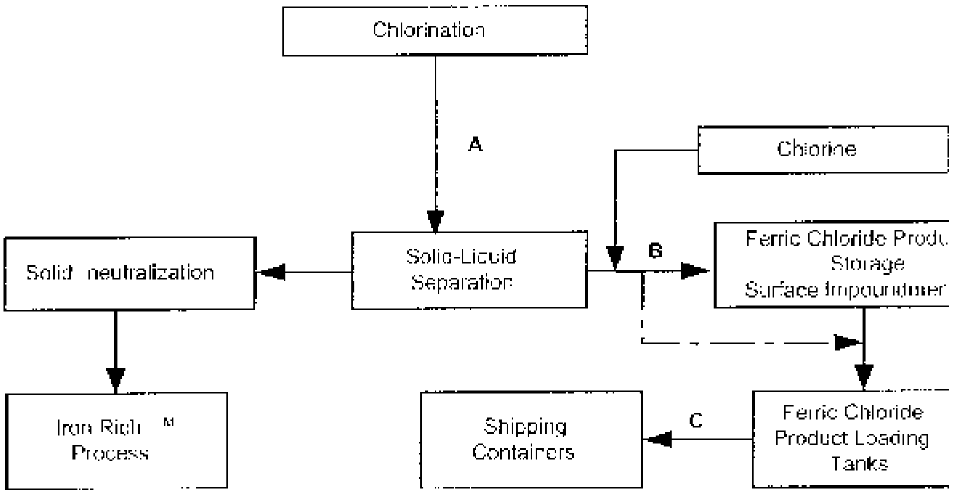

Table 2		
Approximate Wt% of Solids in Ferric Chloride Solution		
A	B	C
1.5	0.1	<0.2

The newly relocated chlorine injection facilities will require additional piping, control valves and environmental equipment to support installation of these facilities 1/2 mile from the current injection point. Permanent facilities are designed and long lead-time equipment is being ordered. The estimated cost of these facilities is $1,125,000. The expectation is to complete the permanent installation by October of 2001.

<u>Response L0017-1</u>: EPA thanks DuPont for the additional information on their plans for the chlorine injection process during the manufacturing of ferric chloride. See our response to comment 22-4a regarding our position on the Bevill status of the ferric chloride residuals. By relocating the chlorine input, DuPont may change its process in such a way that most of their solids will become Bevill exempt. Only solids generated after the addition of chlorine would be captured by the listing.

<u>Comment L0017-2</u>: Ferric Chloride Surface Impoundment Closure

As was discussed on April 3, 2001 DuPont is working with the Delaware Department of Natural Resources and Environmental Control (DNREC) to develop a Conciliatory Agreement and closure plan for the ponds. Please note that as part of this agreement DuPont is planning a DNREC approved closure of the ferric chloride product storage surface impoundment as well as three inactive surface impoundments taken out of service in 1996.

The advent of ferric chloride solids driven listing code could adversely impact approved closure activities in progress. Attachment 1, contains the schedule that has been proposed to DNREC. Current estimate for the closure of all four ponds is $6,800,000. [see docket for attachment]

The Facility plans on exiting out of the last, and only active, surface impoundment in use in the fourth quarter of 2001. Neutralizing and stabilizing the residuals left in this pond will be completed as soon as possible after exiting the pond with the objective to complete managing all residuals in the pond in early 2002.

Ferric Chloride Product Storage Tank Installation

In order to close the final ferric chloride product storage pond the Delaware facility will need to fabricate storage tanks. The Ferric Chloride Storage Tank Project calls for the installation of two (2) 400,000-gallon rubber lined carbon steel tanks. The tanks will be placed in a concrete diked area. Four (4) pumps will be installed to support tanks operation, control valves and piping will also be required to properly manage material pumping. The Ferric Chloride Storage Tank project is estimated to cost $4,900,000.

Tank installation is on an accelerated schedule, so the completion date will match as close as possible the date the facility will no longer use the surface impoundment for storage.

Figure 3 represents the planned changes to move chlorine addition and the installation of the new tanks. It is estimated that about 50 tons of ferric chloride solids will settle out in the new storage tanks per year. These solids will either be pumped back to the neutralization and stabilization facilities, or evaluated for disposal upon removal from the product storage tank. DuPont would like the option to evaluate the suitability of tank solids for potential conversion to iron-products absent the impact of listed waste code K178.

Inclusion of ferric chloride tank solids in the K178 listing would impart a confusing and complex RCRA mixture and derived-from element into a process RCRA waste management scenario historically regulated under multiple RCRA waste characteristics. For example, if the Agency proceeds with a K178 listing for ferric chloride solids, then the RCRA waste classification would not be just K178, moreover it could be EPA codes K178, D002, D007, D008 (depending upon which characteristics apply). The reason is that the proposed LDR treatment standards at 65 FR 55780 do not address the characteristic of corrosivity, chromium or lead toxicity. Thus, a generator is required to include ALL RCRA hazardous waste characteristics in addition to the listing code where the listed waste does not specifically address the constituents that give rise to the additional characteristics (see Technical Corrections to Phase 3 LDRs, l/31/91). Subjecting ferric chloride solids to the K178 listing preserves some of the worst aspects of the RCRA mixture and derived-from rule and, considering the type of facility changes completed or planned and applicable ferric chloride solids waste characteristics, the listing may not be necessary in order to achieve the

Agency's goals.

Figure 3

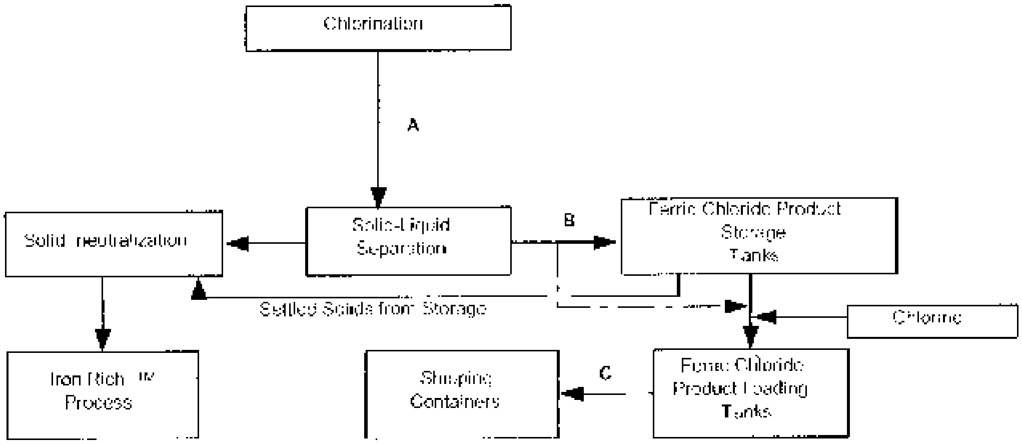

Table 3		
Approximate Wt% of Solids in Ferric Chloride Solution		
A	B	C
1.5	0.1	0.05

Response L0017-2: EPA thanks DuPont for the additional information. See our response to comment 22-10e regarding the closure of the surface impoundments. If DuPont has not closed the surface impoundment prior to the effective date of the listing, it will need to retrofit. The ferric chloride listing is a "non-HSWA" rule, so it will take effect–for the Edge Moor plant–after Delaware adopts it. With regard to the mixture and derived-from rule comment, EPA disagrees with the commenter that the regulations place significant additional burden on the facility. According to the comment, prior to the effective date of the K178 listing, the tank bottoms would be classified as D002, D007, and D008 (corrosivity and toxicity for chromium and lead, respectively). Treatment standards for nonwastewater forms of those characteristics requires treatment of the primary constituent and any underlying hazardous constituents. The treatment standards for K178 are merely a subset of the list of underlying hazardous constituents. Moreover, the values of the treatment standards themselves are equivalent. Once listed, these constituents would still require treatment if their concentration was above the universal treatment standard levels. Therefore, the addition of K178 should not require any additional treatment than what was required of tank bottoms prior to the listing. The only additional burden is that imposition of the listing will require the treated tank bottoms to be disposed in a Subtitle C (hazardous waste) disposal unit rather than a Subtitle D (nonhazardous waste) land disposal unit. Prior to the effective date of the K178 listing, characteristic waste that is decharacterized and meets the treatment standards may be disposed in a nonhazardous waste facility. Once the K178 listing is in effect, the derived-from rule will require any treatment residue to retain the listing and therefore must be disposed in a hazardous waste land disposal unit. Disposal in a Subtitle C land disposal unit should ensure that any residual constituents of concern are not released into the environment.

Comment L0017-3: Wastewater Treatment Sludge Projects

In the proposed Inorganic Hazardous Waste Listing issued in September 2000, the Agency made it clear that commingling of waste at the Delaware facility was a concern. In order to address this concern the Delaware facility is undertaking a two-part project.

The first is to remove the process sumps that pump from the Reaction process step to the wastewater system, thus removing the Bevill exempt solids that carry the constituents of concern from the wastewater sludge. Refer to Figure 4, from the 1998 RCRA 3007 Survey of the Inorganic Chemical Industry from the Edge Moor Plant submitted on May 27, 1999, page 000005. RIN 2 will be rerouted to prevent contamination of the wastewater sludge from the Bevill exempt solids.

The second is segregating the wastewater sludge from Iron Rich^{TM}. This work in addition to moving the chlorine addition point as discussed in Relocation of Chemical Addition to the Ferric Chloride Process Stream above, will keep the Coke and Ore solids separate and Bevill exempt from other wastes on the site.

The estimated cost of these revisions is $850,000.

Response L0017-3: EPA thanks DuPont for the additional information. If DuPont succeeds in isolating the ferric chloride solids that EPA is listing, it will not need to manage its other solids as hazardous waste. If DuPont mixes ferric chloride solids with any other waste, the mixture will be subject to the ferric chloride listing.

Comment ICMP-L0018, Cookson, June 19, 2001

Comment L -1: As mentioned in our earlier conversation, I am Head of Health, Safety and Environment for Cookson Group plc (Cookson), the parent of Anzon Inc. (Anzon). Until 1997, Anzon operated a facility that produced antimony oxide in Laredo, Texas. Lowenstein Sandler PC, on Cookson's behalf, submitted comments on the above-referenced proposed listing explaining why the antimony oxide slag produced at Anzon's Laredo facility should not be included in the listing. Subsequently, we discussed this matter with you and with representatives of TNRCC and you requested that we submit information about our alternatives for managing the Anzon slag and the associated costs.

As you may know, the Anzon slag is a Class 1 waste under the rules of TNRCC. We are continuing to discuss management alternatives with TNRCC. These alternatives include recycling the slag into material used for road construction a use that was approved by TNRCC in 1991. Much of the slag that was produced at the plant was, in fact, recycled in this manner. TNRCC regulations require notification to TNRCC before any recycling or re-use of the material and any such recycling or re-use must be protective of human health and the environment.

We are continuing to refine our analysis of management alternatives and the costs of those alternatives. We still intend to submit information on these costs to you, as well as more recent information about risks that we have been developing. We will send you this information by July 31, 2001.

At this point, it is clear that listing the Anzon slag as hazardous waste would turn a material that has been effectively recycled under Texas law into a hazardous waste that would have to be managed and disposed of at huge expense with little, if any, environmental benefit. We hope you will give careful consideration to the points we have raised in our comment and the information we will provide in July.

Response L0018-1: EPA thanks Cookson for the above information. See the separate comment submissions (set 28, L5, L6, and L19) for our responses to the specific comments.

Comment ICMP-L0019, Cookson, August 28, 2001

Comment L19 -1:

Letter to Wm. Gallager, Region 6, EPA

On behalf of Cookson Group plc ("Cookson"), I would like to thank you for meeting with Dave Polter of ARCADIS G&M and me (via telephone) on August 22, 2001 regarding the impact of the proposed hazardous waste listing on the blast furnace slag at Cookson's former facility in Laredo, Texas.

As you know, the above-referenced rulemaking proposes to list "slag from the production of antimony oxide" as a K-listed hazardous waste. With this letter we request written confirmation regarding the applicability of this hazardous waste listing to slag from the production of antimony oxide that has been beneficially reused and recycled, and the recycled product applied to the land (in this case as aggregate bound up in asphalt) prior to the effective date of the waste listing. It is our interpretation of the applicable regulations that the recycled product will not subsequently be subject to the specific listing definition. That is, if an asphalt product containing antimony oxide slag has been manufactured and used prior to the effective date of the waste listing, and is managed at some point in the future (e.g., excavated during utility construction or road repairs), the recycled product will no longer satisfy the listing description and would not be subject to regulation as a listed hazardous waste.

As we understand it, both headquarters personnel and your regional staff expressed a belief that this was the Agency's interpretation of this issue. The Texas Natural Resource Conservation Commission (TNRCC) has indicated to us that they will look to you for guidance on the effect of a hazardous waste listing on previously recycled material. Your written confirmation of this interpretation would be extremely useful in completing the beneficial management of the remaining slag at the Laredo facility.

Again, Cookson appreciates the opportunity to meet with you to discuss these issues and we look forward to your response.

Response L0019-1: Signed letter to Franklin Boenning from Elizabeth Cotsworth dated October 11, 2001 is in the docket for today’s rulemaking. The text of the letter is below:

I am writing in response to your letter of August 28, 2001 addressed to Mr. William Gallagher, Chief of the Oklahoma/Texas RCRA Permits Section of EPA’s Region 6 office. In that letter, you requested a clarification of the applicability of a proposed hazardous waste listing to slag from the production of antimony oxide. Specifically, you requested clarification of the regulatory status of antimony oxide slag generated by Cookson Group at its former antimony oxide production facility in Laredo, Texas. You explain in your letter that Cookson plans to incorporate the slag into an asphalt product.

Unless and until we finalize federal regulations listing the antimony oxide slag as hazardous waste and these regulations become effective, the slag is not subject to regulation as a hazardous waste. A final decision regarding whether or not to list the slag as hazardous will be made by October 31, 2001. The effective date of such a listing will be six months following its publication in the Federal Register.

The management of any secondary material, including the recycling and/or reuse of secondary material in the production of a product, may be subject to regulation under state requirements. Therefore, prior to the effective date of the potential hazardous waste listing for this material, Cookson should comply with all applicable state requirements governing the reuse and recycling of its slag and/or consult with officials in the appropriate state agencies of each state in which the company plans to manage this material.

Your inquiry focuses on the status of an asphalt product managed or disturbed for some reason after it has been used. Under the federal RCRA program, a waste (or a material derived from a waste) actively managed after the effective date of a listing rule would be subject to the listing rule, even if the waste was originally disposed of prior to the effective date. See 53 FR 17586 (May 17, 1988) or 45 *FR* 33066 (May 19, 1980) and Chemical Waste Management v. EPA 869 F.2d 1526 (1989). In your scenario, however, the slag would be used as an ingredient in a product and the product would be used prior to the effective date of the hazardous waste listing. If some portion of the product is taken out of service and discarded in the future, after the effective date of the listing, that discarded material would be a waste. It would be a hazardous waste if it exhibited any of the RCRA hazardous waste characteristics. However, we do not interpret the RCRA statute and regulations to apply the hazardous waste listing to such a waste. Since the listing does not apply at the time of use, the use would not be subject to RCRA jurisdiction. The material would first fall within RCRA jurisdiction when removed from service and disposed of. At that time, the hazardous waste listing would not apply. Regardless of when the slag is used as an ingredient in the manufacture of a product that will be used on the ground, future releases from the material to the environment could be considered to be wastes and could be addressed under Section 7003 of RCRA, if they should cause an imminent and substantial endangerment.

If you have further questions regarding the regulatory status of your secondary material after the effective date of any future federal regulations governing the material, or questions regarding factors considered in evaluating whether the use of hazardous wastes is legitimate recycling under federal regulations, feel free to contact Ingrid Rosencrantz of EPA's Office of Solid Waste at (703) 605-0709. If you have questions regarding the regulations applicable to the management of secondary material prior to the effective date of any federal regulations listing the waste as hazardous, I suggest that you contact the appropriate state agency in the state or states in which Cookson plans to manage the material.

Comment ICMP-L0020, E.I. du Pont de Nemours, September 9, 2001

Comment L0020-1: DuPont DeLisle, Mississippi Facility Arsenic in Wastewater Treatment Sludge

Analytical data for several samples of wastewater treatment sludges from the Equalization Basin and the Disengagement Basin at the DeLisle facility (collected in the DuPont sampling and analysis program in response to the Inorganic Chemical Manufacturing Listing proposal) indicated arsenic concentrations in SPLP extracts at levels above the health-based limit for arsenic used in the proposal. However, corresponding total composition data for arsenic in the wastewater sludge indicates that the arsenic level is uniformly below 5 mg/kg on a total composition basis and hence would be less than the Toxicity Characteristic (TC) regulatory limit of 5 mg/L via TCLP extraction.

Background

Arsenic is found in the ores used at the facility at concentrations ranging from less than 10 parts per million to 100 parts per million (based on 1999 and 2000 ore analyses). The average arsenic concentration for ores in the year 2000 was 14 ppm.

Existing Regulatory Controls

The State of Mississippi requested and received arsenic monitoring in wastewater under the facility's NPDES permit for a one-year period. No further monitoring was required after this period, and no other information was requested by the State. However, this monitoring program prompted a preliminary study to determine the source of arsenic in wastewater. The resulting preliminary, limited study of the wastewater sources of arsenic indicated that greater than 85% is found in one stream from the Chlorination process, namely Reaction Scrubber Pre-Treatment (RIN 3 of the Mississippi facility's RCRA 3007 Survey response). EPA states in the Titanium Dioxide Listing Background Document for Inorganic Chemical Listing Determination (page 50) that solids in RIN 3 are Bevill-exempt.

The DeLisle site operates under a RCRA Storage Permit and is subject to RCRA Corrective Action. A RCRA Facility Investigation will be completed in 2001, and corrective action will be included in the site permit, EPA Region 4 is aware of the trace arsenic in wastewater sludge at the site.

Repeat Analysis

Based on review of the arsenic results from the sludge sampling and analysis in the fall of 2000 at STL-West Sacramento, DuPont requested analysis of archive wastewater sludge samples from the DeLisle Equalization Basin. As attached Table 1[1] indicates, the repeat analysis of archive samples done by STL-Denver indicates lower levels of SPLP arsenic for the sludge samples from this basin with SPLP levels generally below the 50 ug/L drinking water standard for arsenic. Additionally, this repeat total composition analysis confirms that arsenic is less than a reporting limit of 5 mg/kg in these Equalization Basin wastewater sludge samples and thereby would have TCLP values less than 5 mg/L.

Conclusions

Regulatory controls via the NPDES program and the RCRA Corrective Action program assure protective management of the trace levels of arsenic in the DeLisle wastewater treatment sludge. Repeat analyses of Equalization Basin wastewater sludge samples indicate lower levels of SPLP arsenic than those previously submitted to EPA. The original and repeat analyses for total composition arsenic in DeLisle wastewater sludge samples demonstrate that DeLisle wastewater treatment sludge would not be a TC hazardous waste for arsenic.

DuPont plans to conduct further monitoring to verify that the arsenic levels in DeLisle wastewater treatment sludge are maintained below TC regulatory levels prior to any disposal in a non-hazardous waste landfill.

EPA can rely on the existing Toxicity Characteristic and other regulatory controls in already place to provide environmental protection with regard to management of DeLisle wastewater treatment sludge.

<u>Response L0020-1</u>: EPA thanks DuPont for the additional information. See our response to comment 22-5d-1 regarding arsenic as a constituent of concern for the wastewater treatment solids.

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[1] See docket copy of comment for Attachment 1.

Comment ICMP-L0021 E.I. du Pont de Nemours, February 15, 2001

[Note: See docket for CDs and attachments]

Introduction

Thank you for your electronic mail message of February 9, 2001. This response is presented below in the order of your electronic mail message, with the EPA request followed by the DuPont response. The term data validation report is used herein to refer to the multi-volume Environmental Standards, Inc. materials submitted by DuPont on December 22, 2000.

Comment L0021-1:

A. General Information:

1. The CLP data package Severn Trent delivered to Environmental Standards.

Copies of the laboratory data packages for the wastewater and sludge/solid sample analyses collected in association with the Inorganic Chemicals Manufacturing Waste listing proposal are provided on copies of CD-ROMs provided by the two Severn Trent Laboratories (STL) facilities involved in this program. These electronic files are readable in Adobe Acrobat®.

A summary of the data package electronic files and the corresponding data validation report volume, DuPont site name, and type of sample is provided in Attachment 1. The laboratory data package file name also corresponds to the laboratory project number. The laboratory project number can be used to cross-reference the laboratory data packages to the data validation reports submitted to EPA on December 22, 2000 by using the Table 1 provided in each data validation report. There is no CD-ROM corresponding to Volume 1 of the data validation report because Volume 1 was an overall summary of the entire data validation report.

The laboratory data packages on the enclosed CD-ROMs provide a complete record for the sample analyses including the analysis reports, quality control (QC) summaries, and associated raw calibration, QC, and sample data. The data validation reports submitted to EPA on December 22, 2000 only included the QC documentation and other material from the laboratory data packages necessary to support the validation effort (see Section 3 of each report). Additionally, any submittals provided to Environmental Standards, Inc. (the third party validation consultant) from the laboratories that were not included in the original data packages are included in the Project Correspondence (Section 5) of each data validation report.

2. Severn Trent's lab method detection limits (MDLs) studies for both the ICP (SW 846 6010) and ICP/MS (SW 846 6020) analyses. Please explain how these studies were used to support the laboratory's reporting limits. In Volume 7, there is a handwritten un-paginated sheet after page 160, titled "Analysis MDLs, converted to instrument levels" that confuses processes used for the detection limit determinations. That page provides a list of the current MDLs, but it is not clear how they relate to the instrument detection limits (IDLs) and the laboratory reporting limits (RLs).

Attachment 2 provides the aqueous and solid method detection limit (MDL) study summaries for both STL facilities SW-846 6010B and SW-846 6020 analyses that were used for this program. The laboratories reported results down to the individual element MDLs for this project. Both STL facilities perform MDL studies for each instrument and therefore, report the pooled maximum MDL from all instruments for each element. The TCLP and SPLP MDLs are based upon the aqueous MDLs. The project reporting limits (RLs) were set to be greater than the statistical MDLs and are at concentrations that provide quantitative results.

The project RLs are consistent with those presented in the sampling and analysis plans provided to EPA in the November 13, 2000 comment submission package (EPA Ti02 Listing Proposal Metals Sampling and Analysis Program Process Solids & Pond Sludge, [Attachment 5.1.3-C of the November 13, 2000 submission] and EPA Ti02 Listing Proposal Metals Sampling and Analysis Program Wastewater Streams, [Attachment 5.1.3-D of the November 13, 2000 submission]). Positive results detected between the MDL and the RL were qualified as quantitative estimates and flagged "J" by Environmental Standards. MDLs and RLs for all samples were adjusted to be sample specific by incorporating preparation factors and analysis dilution factors.

The page entitled "Analysis MDLs, converted to instrument levels" was prepared by the Environmental Standards data validation chemist to reflect the MDLs converted to the mg/L instrument levels that could be directly compared to raw instrument data printouts in order to quickly identify results above the MDL when examining the raw data. These values do not reflect IDLs; IDLs were not used for any reporting purposes.

The MDL study provided in Attachment 2 for STL-Sacramento was prepared in 1998. Discussions between Environmental Standards and STL-Sacramento indicate that STL-Sacramento confirmed the adequacy of the 1998 MDL study with additional MDL studies for aqueous samples in 2000.

3. Please identify the digestion methods used for both solids and aqueous samples.

The digestion methods used by the two STL facilities are as follows:

Matrix/Analysis	STL-Sacramento Digestion Method	STL-Denver Digestion Method
Sludge or Solids/SW-846 6020	SW-846 3050B	SW-846 3050B
Sludge or Solids/SW-846 6010B	SW-846 3050B	SW-846 3050B
Wastewater or Aqueous 846 6020 Blanks/SW-	SW-846 3005A	SW-846 3010
Wastewater or Aqueous 846 6010B Blanks/SW-	SW-846 3010A	SW-846 3010A
TCLP Leachates/SW-846 6020	SW-846 3005A	Not Applicable
TCLP Leachates/SW-846 6010B	SW-846 3010A	Not Applicable
SPLP Leachates/SW-846 6020	SW-846 3005A	Not Applicable
SPLP Leachates/SW-846 6010B	SW-846 3010A	Not Applicable

The digestion methods performed by STL-Sacramento and STL-Denver are consistent with the digestion methods identified in the sampling and analysis plans provided to EPA (EPA Ti02 Listing Proposal Metals Sampling and Analysis Program Process Solids & Pond Sludge, [Attachment 5.1.3-C of the November 13, 2000 submission] and EPA Ti02 Listing Proposal Metals Sampling and Analysis Program Wastewater Streams, [Attachment 5.1.3-D of the November 13, 2000 submission]).

4. Please specify the components and their concentration levels in lab standards (i.e., ICV, CCV, ICSA, ICSAB).

The concentration levels for the ICV, CCV, ICSA, ICSAB for both STL-Sacramento and STL-Denver are provided in Attachment 3. These summaries were provided to Environmental Standards at the onset of the validation effort and were used by the validation chemists to verify standard analyses. The concentration levels for the ICV, CCV, ICSA, and ICSAB for the STL-Denver are also provided in the CD-ROMs labeled DO_____. pdf .

5. Please describe how Severn Trent prepared standards to calibrate both ICP and ICP/MS, and their calibration curves for all metals, especially for thallium.

Intermediate calibration standards are purchased as custom STL multi-element mixes or as single-element solutions. Calibration standard solutions must be replaced prior to the expiration date and must be replaced sooner if verification from an independent source indicates a problem. Working calibration and calibration verification solutions are prepared in an acid matrix which is appropriate for the instrument being used and final sample preparation matrix. Each instrument is calibrated according to the instrument manufacturer's recommended procedures. The calibration curve must consist of a minimum of a blank and a standard. The calibration must be performed daily and each time the instrument is set up.

B. Information Needed for Volumes 3, 4, and 7:

New Johnsonville Settling Pond (Volume 3):

1. Please provide all SPLP ICP/MS lab outputs.

All SPLP ICP/MS lab outputs for the Johnsonville Settling Pond are included in the CD-ROM labeled GOJ210183.pdf and provided pursuant to request A,1 above,

New Johnsonville - Hillside Pond (Volume 4):

1. Please provide all TCLP ICP/MS lab outputs.

All lab outputs for the Johnsonville Hillside Pond are included in the CD-ROM labeled GOJ240293.pdf and provided pursuant to request A.1 above,

2. Please provide all SPLP ICP and ICP/MS lab outputs.

All lab outputs for the Johnsonville Hillside Pond are included in the CD-ROM labeled GOJ240293.pdf and provided pursuant to request A.1 above.

3. Please provide ICP and ICP/MS lab outputs for the equipment blank.

All lab outputs for the Johnsonville Hillside Pond are included in the CD-ROM labeled GOJ240293,pdf and provided pursuant to request A.1 above.

4. Please provide ICP and ICP/MS raw data for the LCS, MS, and MSD analyses.

All lab outputs for the Johnsonville Hillside Pond are included in the CD-ROM labeled GOJ240293.pdf and provided pursuant to request A.1 above.

Edge Moor (Volume 7):

1. Please clarify the dilution factors for samples analyzed for total concentrations of metals using 6020 and verify that MDLs, RLs, and sample results are corrected appropriately to reflect sample dilutions. There are three places in this report noting dilutions of samples and TCLP/SPLP leachates: (1) data validator's narrative (Section 1, page 3, bullet 6); (2) lab case narrative (Section 4, page 3); and (3) lab's correspondence to data validator dated November 10, 2000 (Section 5). These three sources do not consistently describe the same dilutions for various runs. After examining the lab's sample preparation worksheets and the analytical run logs, we are still not clear how the samples were diluted for the analysis.

Environmental Standards data validation chemists confirmed that the final validated MDLs, RLs and sample results were properly corrected to include sample preparation and analysis dilution factors as discussed in the response to request A.2 above.

The data validator's narrative (Section 1, page 3, bullet 6) addresses all instrumental dilutions performed (either due to high target analyte concentration or due to interference) including those addressed in the laboratory Case Narrative.

The laboratory Case Narrative (Section 4, page 1) addresses the 5-fold instrument dilutions that were performed for the SPLP analyses which were the only dilutions performed for reasons other than high target analyte concentration (i.e., the SPLP dilutions were performed due to severe chloride interference). The section of the laboratory Case Narrative mentioned in the request directly above (Section 4, page 3) does not address dilutions.

The laboratory's correspondence to the data validator dated November 10, 2000 (Section 5) addresses the 5-fold preparation “dilution" that was performed for the TCLP analyses (i.e., for the TCLP leachates, the starting digestion volume was 10 mL and the final digestion volume was 50 mL which results in a 5-fold preparation "dilution"). This correspondence also addresses the fact that the TCLP MDLs initially reported by the laboratory did not incorporate this preparation factor (this factor must be incorporated because the laboratory's aqueous MDLs are based on a preparation using 50 mL for both the starting and final volumes). This issue is addressed more thoroughly in the data validator's narrative (Section 1, page 5, bullet 13). As stated in the data validator's narrative, the data validator corrected the validated TCLP MDLs to reflect this preparation factor.

All preparation volumes are documented on the laboratory "Metals Sample Preparation Logs" (aqueous volumes different than 50 mL and solid sample weights different than 1.00 grams must be accounted for in the MDL and RL calculations). All instrumental dilutions are documented on the instrumental sample raw data "Analysis Reports" as well as the "ICP Runlog/Summary" instrument printouts and ICP/MS "Dataset Reports". The "Metals Sample Preparation Logs", "ICP Runlog/Summary" instrument printouts, and ICP/MS ºDataset Reports" are located in Section 3 of the data validation report. The aforementioned forms and the instrumental sample raw data "Analysis Reports" are provided by submission of the complete laboratory data packages (see response to request A.1 above).

2. Please provide lab outputs for total and ICP-SPLP analyses (Section 3, pages 276-277 and 279-284, and pages 237-244).

All lab outputs for Edge Moor Iron Rich™ filter cake are included in the CD-ROM labeled GOJ240269.pdf and provided pursuant to request A.1 above.

3. Please provide lab outputs for ICP/MS-SPLP analysis (Section 3, pages 434-442).

All lab outputs for Edge Moor Iron Rich™ filter cake are included in the CD-ROM labeled GOJ240269.pdf and provided pursuant to request A.1 above.

4. Please provide lab outputs for ICP/MS-Mn analysis (Section 3, pages 466-485).

All lab outputs for Edge Moor Iron Rich™ filter cake are included in the CD-ROM labeled GOJ240269.pdf and provided pursuant to request A.1 above.

5. Please provide lab outputs for ICP/MS for total analysis (Section 3, pages 523-526, 535-544, 552-556, 558-560, 562, 564, 583-596).

All lab outputs for Edge Moor Iron Rich™ filter cake are included in the CD-ROM labeled GOJ240269.pdf and provided pursuant to request A.1 above.

6. Please provide ICP and ICP/MS raw data for the LCS, MS, and MSD analyses.

All lab outputs for Edge Moor Iron Rich™ filter cake are included in the CD-ROM labeled GOJ240269.pdf and provided pursuant to request A.1 above.

Please place a copy of these materials in the RCRA Docket as appropriate.

DuPont would appreciate the opportunity to meet with you and your colleagues at EPA to further review and discuss the analytical data submission. We think that a technical discussion between EPA, Environmental Standards, and DuPont would facilitate the Agency's use of this material in final decision-making on the Inorganic Chemical Manufacturing Waste rulemaking.

Thank you for your consideration of this information.

Response L0021-1: EPA thanks DuPont for providing this additional information to facilitate our review of their data. See the “Assessment of DuPont’s Analytical Data: Background Document for the Inorganic Chemical Listing Determination, October 2001" for our conclusions regarding DuPont’s data submission.