STATE OF NEVADA
Jim Gibbons, Governor
Department of Conservation & Natural Resources
Allen Biaggi, Director
DIVISION OF ENVIRONMENTAL PROTECTION
Leo M. Drozdoff, P.E., Administrator

January 18, 2007

Mr. Brian Spiller
Stauffer Management Company LLC
1800 Concord Pike
Wilmington, DE 19850-5438

Mr. Curt Richards
Olin Corporation
3855 North Ocoee Street, Suite 200
Cleveland, TN 37312

RE: Nevada Division of Environmental Protection Response to:
Toxicological Profiles for Three Organic Acids
dated November 16, 2007

NDEP Facilities ID# H-000536

Dear Sirs:

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document and provides comments in Attachment A. For the purpose of this letter the Companies listed above shall be referred to as "the Companies". The document was found to be generally acceptable with one exception, the Section on phthalic acid**.** Please revise and resubmit the document with a fully annotated response-to-comments letter (responding only to the comments on phthalic acid**)**. Please advise the NDEP regarding the schedule for this response.

Should you have any questions, please contact me at (702) 486-2850, extension 247 or brakvica@ndep.nv.gov.

Sincerely,

Brian A. Rakvica., P.E.
Supervisor
Special Projects Branch
Bureau of Corrective Actions

cc: Jim Najima, NDEP, BCA, Carson City
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Attachment A

It is noted that the Companies provided copies and/or internet web links to readily available documents they had used to prepare the toxicological profiles for three organic acids. The organic acids reviewed in the document included the following: benzenesulfonic acid (BSA), p-chlorobenzenesufonic acid (pCBSA), and phthalic acid. The purpose of the report was to identify toxicity values for these three organic acids for use in assessing risks from environmental exposures and deriving screening levels for groundwater.

I. GENERAL COMMENTS

The Companies noted that some of the primary documents cited in the report were not obtained or reviewed. This is documented in the reference section of the report. It is recommended that primary citations be obtained whenever possible for complete documentation in future work products. It should be noted that the Companies did use secondary references prepared by other regulatory agencies (e.g., Michigan Department of Environmental Quality) that are likely internally and externally peer-reviewed. Therefore, these documents were considered adequate for our review.

The approach outlined by the Companies to develop human health toxicity criteria is consistent with USEPA guidance (USEPA, 1989, 1991, 1993). A review of the mathematical equation and exposure assumptions used to derive human health screening levels for groundwater was conducted and verified to be correct.

For each of the organic acids, the Companies provided a complete discussion of the uncertainty associated with the derived chronic human health toxicity values. Because the overall confidence in the chronic toxicity database for each organic acid is low, we do not agree with the following sentence found at the end of each discussion section found on pages 3-4, 4-3, and 5-5: “The value, however, is believed to provide a **conservative** (emphasis added) estimate of toxicity.”

As noted in the document, ecological toxicological criteria were not derived in this report due to receptor specificity. The document does summarize, when available, reported ecological toxicity data that can be used in future ecological assessments. A thorough review of these data was not conducted, but the data contained in the Registry of Toxic Effects of Chemical Substances Database (RTECS) and ECOTOX database were verified.

II. SPECIFIC COMMENTS

Section 3: Benzenesulfonic Acid (BSA)

Limited toxicity data are available for BSA. The Companies selected a surrogate chemical p-toluenesulfonic acid (pTSA) to represent BSA. The USEPA selected pTSA as a toxicological surrogate for BSA in the HPV (high production volume) program (NOTOX, 2003, 2007). We agree that this is a reasonable toxicological surrogate for BSA. A sub-chronic NOAEL of 500 mg/kg-day for pTSA with an uncertainty factor of 1,000 was applied to derive an oral RfD of 0.5 mg/kg-day.

Using the oral RfD of 0.5 mg/kg-day, the human health groundwater screening level of 18 mg/L was confirmed.

Please note that the citation date for BSA NOTOX report is 2003, not 2004. Please revise the year.

Section 4: p-Chlorobenzenesulfonic Acid (pCBSA)

The toxicity database for pCBSA is also sparse. The Companies used the Michigan Department of Environmental Quality (MDEQ, 2006) recommended oral RfD of 1 mg/kg-day for pCBSA. We agree that this is a reasonable recommendation. MDEQ (2006) reviewed the available toxicity data and, although limited, a NOAEL of 1,000 mg/kg was identified in a 28-day feeding study in male rats. Because of the limited oral bioavailability of pCBSA and expected urinary excretion, it was assumed that pCBSA sub-chronic toxicity would not be much different. MDEQ applied a 1,000 fold uncertainty factor to derive the 1 mg/kg-day oral RfD. The corresponding groundwater screening level is 37 mg/L. This groundwater value is higher than that recommended in a Record of Decision (ROD) for Montrose Chemical and Del Amo Superfund Sites located in Los Angeles, California (USEPA, 1999). According to the ROD, a provisional drinking water standard of 25 mg/L was used for pCBSA. This is based on one sub-chronic non-cancer study in which the State of California established a non-promulgated and provisional No Observed Adverse Effect Level (NOEL) of 1 mg/kg/day for pCBSA. This is the same value The Companies recommended based on the MDEQ (2006) report. The ROD did not specify the exposure assumptions used in the derivation of the 25 mg/L provisional drinking water standard. When default exposure assumptions (i.e., 30 year exposure duration, 2 liters/day drinking water ingestion rate, and 70 kg body weight) are used with the RfD of 1 mg/kg-day, the corresponding groundwater concentration is 37 ug/L Therefore, we find the recommended groundwater screening level derived by the Companies to be adequate since we were able to verify the calculation.

On page 4-2, the Companies report refers to a Cal-EPA reference to also support the oral RfD of 1 mg/kg-day. However, we were unable to confirm this reference. The Companies have already provided a response to this comment indicating that they also were unable to locate the Cal-EPA citation/document. The Companies noted that their report should have included the MDEQ reference to make the documentation more clear.

Section 5: Phthalic Acid

Based on the availability of relevant toxicity data, USEPA developed a sub-chronic and chronic oral reference dose (RfDo) for p-phthalic acid of 1 mg/kg-day (USEPA, 1997, see Attachment 1) (also cited in the Preliminary Remediation Goals [USEPA, 2004]). According to information provided in HEAST (USEPA, 1997), the chronic and subchronic RfDs are based on a two-year rat dietary study with bladder hyperplasia as the reported critical effect. It is not clear why The Companies identified phthalic anhydride as a toxicological surrogate for phthalic acid when a USEPA chronic RfD is available. **Please respond to this comment and revise the document as necessary.**

III. REFERENCES CITED

The Companies Consulting, Inc. 2007. Toxicological Profiles for Three Organic Acids prepared for Syngenta Crop Protection, Inc. Annapolis, MD. November 16.

MDEQ. 2006. Toxicological assessment for Part 201 criteria/213 RBSL development, parachlorbenzoic acid, CAS #98-66-8. January 2006. Michigan Department of Environmental Quality, Remediation and Redevelopment Division, MI.

NOTOX. 2003. HPV Assessment Report on Benzenesulfonic acid CAS No. 98-11-3. Prepared by NOTOX Safety and Environmental Research B.V., Washington, D.C. September 13.

NOTOX. 2007. HPV Assessment Report on p-Toluenesulfonic Acid CAS No. 104-15-4. Prepared by NOTOX Safety and Environmental Research B.V., Washington, D.C. June.

USEPA. 1989. Risk assessment guidance for Superfund: volume 1, human health evaluation manual, part 1, interim final. U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Washington, DC. December.

USEPA. 1991. Risk assessment guidance for Superfund: volume 1, human health evaluation manual, part B, development of risk-based preliminary remediation goals, interim. U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Washington, DC. December.

USEPA. 1993. Reference dose (RfD): description and use in health risk assessments. Available at: www.epa.gov/iris/rfd.htm. Last updated on January 25, 2007. U.S. Environmental Protection Agency.

USEPA, 1999. EPA Superfund, Montrose Chemical and Del Amo, Los Angeles, California. March. http://www.epa.gov/superfund/sites/rods/fulltext/r0999035.pdf

USEPA, 2004. Preliminary Remediation Goals (PRGs), Region 9, User's Guide: http://www.epa.gov/region09/waste/sfund/prg/files/04usersguide.pdf

USEPA. 2007. ECOTOX Database. Available at: http://cfpub.epa.gov/ecotox/. Accessed on July 24, 2007. Last updated on July 31, 2007. U.S. Environmental Protection Agency, Duluth, MN.

USEPA, 1997. Health Effects Assessment Summary Tables (HEAST), FY-1997 Update. Office of Research and Development, July.

ATTACHMENT 1

p. 1-81 from HEAST (USEPA, 1997)