P. 1 of 5

177589

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: June 22, 1992

SUBJECT: Lead Results for Soils - NL Industries, IL/ATSDR Study

FROM: David Payne, Chief
Laboratory Scientific Support Section, CRL (SL-10C)

TO: Brad Bradley, Environmental Engineer
IL/IN Remedial Response Branch
Office of Superfund

During the week of June 15, 1992 soil analyses (Cd & Pb) were completed for the subject study for ATSDR. The final confirmatory soil analyses results were received from the CLP lab. Tables are attached to this memo showing all lead analyses of soils for the study.

During December 1991/January 1992, soil results were received from the CLP lab for the 59 high priority soils. These results were deemed acceptable by CRL/ESAT data reviewers and were passed on to you, and Ecology & Environment (E&E). These 59 soils are Samples E01 through E59 on the attached Tables. We understand the 59 cadmium and lead results were released to the public during January or February 1992.

During data review for the remaining soil results (Samples E-60 through E-411), an anomaly appeared in the QC audit results - field duplicate results showed unacceptable precision. The field duplicates were "blind" to the CLP lab for the first analyses. The field duplicates, in the first 59 samples tested, are of acceptable precision. Field duplicates are noted by the symbol "F.D." in the attached Tables. "L.D." is a symbol for lab duplicates.

EPA FORM 1320-6 (REV. 3-76)

During January and March 1992, the CLP lab retested 10 pairs of the field duplicate soils having poor precision upon the request of the CRL Laboratory Support Section. Lead results for these rechecks indicated the initial soil analyses were incorrect.

1. During initial analyses (right hand column of attached Tables), lab duplicates were selected from the same ~~sample aliquot~~ sub-aliquot from the sample bottle. Lab aliquots provided a false sense of security for the initial analyses.

2. Field duplicate rechecks (the 2ND and 3RD columns from the right in the attached Tables) were selected from different sub-aliquots from the sample bottle. Their excellent precision or repeatibility indicated something was wrong for the sample analyses for E-60 through E-41.

3. On March 29, 1992, the CLP lab orally offered to retest all soils for Cd & Pb. This was requested of the Sample Management Office on April 2, 1992.

During April and May 1992, the CLP lab retested all soils for Cd & Pb. The lead results are labeled "Lead 2ND Analysis" on the attached Tables. During the ~~lead~~ soil re-analyses:

1. Lab duplicates, at the rate of 3 in 20, were selected as different ~~sub-sam~~ sub-aliquots from the sample bottle. These show excellent precision, and are a much more stringent QC audit than the lab duplicates selected from the same sub-aliquot during the initial soil analysis.

2. Field duplicate soil results are of excellent precision for lead for the reanalyses. An apparent anomaly was rechecked by the CLP lab for E139/E-147 field duplicate pair. The field duplicates yield "different" lead results on verification.

3. Comparison of lead results for the initial analysis and ~~re-analy~~ reanalysis of soils shows the 2 sets of results to differ unacceptably for individual soils, ~~The 2ND set should be~~ for Samples E-60 through E-411. ~~The 2ND set of~~ The re-analysis results should be used. The initial analysis results have the appearance of mixed-up samples during sample preparation (This is a comment of 1 CRL reviewer).

4. For the first 59 soils, the initial analyses can be and should be used for 58 of the soils since the results have been released to the public, and there is little difference in lead contents or concentrations for either set of analyses. An acceptable difference is ±200 mg/kg in the range of 100 to 1000 mg/kg lead. This was discussed in more detail in a memo to you dated June 7, 1992.

5. For Sample E-43, the reanalysis result of 216 mg/kg Pb (and corresponding Cd value) should be used. The 216 mg/kg value was verified by the CLP lab with replicate values of 209 and 214. Even though the 3010 mg/kg value was released to the public, the 216 mg/kg value should be used as a corrected value.

The above discussion summarizes soil results for lead. The second set of analyses are acceptable ~~generally~~ for lead and cadmium for Samples E-43 and E-60 through E-411. Either the initial or re-analysis results can be used for Samples E-01 through E-42 and E-44 through E-59.

c.c. Ecology & Environment
L. Fabiniski, ATSDR
F. Stallings, ATSDR
C.T. Elly, CRL
D. May, CRL
F. Morris, CRL
J. Thakkar, CRL - ATM: ESAT

Attachment: 21 Tables