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ELPAT Program: Background and Current Status

Curtis A. Esche & Jensen H. Groff Column Editors

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Introduction

The Environmental Lead Proficiency Analytical Testing (ELPAT) Program is administered by the American Industrial Hygiene Association (AIHA), in cooperation with researchers at the Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH), and the U.S. Environmental Protection Agency (EPA), Office of Pollution Prevention and Toxics, to evaluate and improve the performance of laboratories conducting analyses associated with lead abatement.[1,2] Proficiency test samples are prepared by an AIHA contractor, Research Triangle Institute (RTI), using real-world paint chips, dusts, and soils. Quarterly samples are sent to participating laboratories by RTI and the performance of the laboratories is evaluated at NIOSH with sufficient time for laboratories to obtain repeat samples and to correct analytical problems before the next round of samples is sent.

The ELPAT Program is open to all interested laboratories, including laboratories outside the United States, laboratories seeking accreditation by various private or state laboratory accreditation systems, laboratories that do not intend to seek laboratory accreditation, and laboratories conducting analyses at permanent fixed locations, in self-contained mobile facilities, and at temporary locations (e.g., abatement sites). The ELPAT Program is part of an EPA program, the National Lead Laboratory Accreditation Program (NLLAP), to recognize private and state laboratory accreditation systems.[3] U.S. Department of Housing and Urban Development (HUD) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing[4] require the use of NLLAP-recognized laboratories to ensure the consistency and quality of measurements of lead in paints, soils, and dusts. NLLAP requirements include successful participation in the ELPAT Program for EPA recognition of accreditation. Two organizations, the American Association for Laboratory Accreditation (A2LA)[5] and AIHA,[6] are recognized as accrediting organizations under NLLAP and have in place environmental lead laboratory accreditation systems. Each of these accreditation systems requires participation in ELPAT for environmental lead analysis of paint chips, dusts, and soils. Information on specific A2LA or AIHA laboratory accreditation requirements can be obtained from A2LA and AIHA at the addresses listed at the end of this column.

ELPAT Performance Evaluation

The evaluation of the individual laboratories in the ELPAT Program is based upon consensus values from reference laboratories and is modeled after the evaluation procedures currently used in an industrial hygiene proficiency testing program, the Proficiency Analytical Testing (PAT) Program. Reference laboratories are preselected to provide the performance limits for each sample. These laboratories must meet the following criteria: the laboratory was proficient in the previous ELPAT round for paint chips, soils, and dust wipes, and the laboratory must be accredited by an EPA NLLAP-recognized accrediting organization.[7]

After data from reference laboratories are collected and extreme reference laboratory data have been statistically treated, the mean ±3 standard deviations of the treated reference laboratory data become the acceptable performance range. Laboratory results are acceptable if they fall within the performance limits. Results falling outside the performance limits are designated as outliers. This is the same criterion used by NIOSH to establish acceptable and outlier performance of industrial hygiene laboratories in the PAT Program.[7]

Laboratories are rated based upon performance in the ELPAT Program over the last year (i.e., four rounds) for each lead matrix—paint chips, soil, and dust wipes. The laboratory is proficient for each lead matrix if the following occurs:

1. all four results have been reported and all are designated as acceptable for the last two consecutive rounds; or
2. three-fourths or more of the results reported in the last four consecutive rounds are designated as acceptable.

However, if a laboratory does not report values for the lead matrix on the round being evaluated, the laboratory is not rated.

Criteria for proficient performance are similar to the procedure used in the PAT Program.[7] However, the ELPAT statistical protocol and related computer programs have been designed to permit future change to harmonize these proficiency test requirements with internationally harmonized proficiency test protocols. The international protocol for consensus values from reference laboratories using z-scores has been developed and published by the Association of Official Analytical Chemists International, the International Organization for Standardization, and the International Union of Pure and Applied Chemistry.[8]

ELPAT Round 13, November 1995

Paint samples for round 13 were prepared from paint chips collected from a variety of sites in North Carolina and Ohio, including two schools. The chips were ground to a maximum particle size of 120 μm.

Soil samples came from driplines around older houses in North Carolina. Soil samples were dried, sterilized by heating the soil to 325°F for a minimum of 2 hours, and finally sieved to a maximum particle size of 150 μm.

Dust wipes were prepared from dust collected from households and abatement sites in North Carolina and an Air Force base shooting range office. After sterilization by gamma-irradiation, the dust was sieved to a maximum particle size of 150 μm and then gravimetrically loaded onto Whatman 40 filter paper. The loaded filters were moistened with 0.5 ml of 3 percent hydrogen peroxide solution. The blank wipe was prepared from a Whatman filter moistened with the same hydrogen peroxide solution. Whatman fil-

TABLE 1. ELPAT Program Summary Statistics of Reference Laboratories for Round 013

Sample Type	Sample	N	Mean	Minimum	Maximum	STD	RSD (%)	Acceptable Range
Paint chips (%)	1	67	0.0897	0.0744	0.1106	.010	10.9	0.0604–0.1189
	2	67	0.2986	0.245	0.3462	.026	8.7	0.2206–0.3766
	3	67	9.3596	7.7705	10.7	.714	7.6	7.2185–11.5006
	4	67	0.8328	0.717	0.9545	.065	7.8	0.6377–1.0279
Soil (mg/kg)	1	67	641.2	544.1	726.9	50.1	7.8	490.9–791.5
	2	67	401.2	336.5	472	37.8	9.4	287.6–514.7
	3	67	1048.1	926	1185.3	76.6	7.3	818.2–1277.9
	4	67	144.7	117.4	168	15.3	10.6	98.8–190.6
Dust wipes (μg)	1	67	398	344	450	31.8	8.0	302.7–493.3
	2	67	280.7	235.2	323.8	25.8	9.2	203.3–358.1
	3	67	105.4	83.7	127	12.8	12.1	66.9–143.8
	4	67	1283.7	1095.4	1452.4	104	8.1	972.4–1594.9

ters are easier to digest than other wipe media (e.g., baby wipes, hand wipes) used by many laboratories. In the future, the wipe medium may be changed from the Whatman filter to a commercially available wipe that more closely represents field sample media, if a single sample medium is recommended by various lead methods.

A total of 402 laboratories were enrolled for round 13 of the ELPAT Program, with 371 (92%) laboratories submitting results either by paper or by the automated data entry system. Table 1 lists summary statistics of reference laboratories for each matrix and sample number. Agreement among reference laboratories is demonstrated by relative standard deviations ranging from 7.6 to 10.9 percent for paint chips, 7.3 to 10.6 percent for soils, and 8.0 to 12.1 percent for dust wipes. The values above 10 percent were all at low lead levels, which is similar to the findings on previous ELPAT rounds for each matrix.

Table 2 shows the number of all participating laboratory analyses that were identified as outliers. The percentage of outliers for all analyses was under 9.3 percent (3.3 to 9.3% for paint chips, 3.2 to 7.3% for soils, and 3.2 to 7.9% for dust wipes). This is also similar to the frequency of outliers reported on the earlier rounds of ELPAT for each matrix.

Sample digestion techniques are grouped into hotplate, microwave, and all other techniques reported by participants. Hotplate digestion categories are: NIOSH 7082/7105 (a nitric acid/hydrogen peroxide digestion method modified from NIOSH Manual of Analytical Methods, Method 7082[9]), EPA SW846-3050A[10] (an EPA nitric acid/hydrogen peroxide method), and other hotplate techniques. Microwave digestion categories are: EPA SW846-3051[11] (a nitric acid digestion method), EPA AREAL[12] [a nitric/hydrochloric acid digestion method from AREAL (RTP-MRDD-037) standard operating procedure], and other microwave techniques. The "other" category includes nonmicrowave and nonhotplate techniques such as X-ray fluorescence sample preparation, leaching techniques, muffle furnace, and Parr bomb.

Instrumental methods are categorized into flame atomic absorption (FAA), graphite furnace atomic absorption (GFAA), inductively coupled plasma–atomic emission spectroscopy (ICP-AES), laboratory X-ray fluorescence (lab XRF), and "other," which includes ICP-mass spectroscopy (ICP-MS) and anodic stripping voltametry (ASV). The American Society for Testing Materials (ASTM) has released a publication of ASTM standards on lead-based paint abatement in buildings, which includes standards for the collection, digestion, and analysis of paint, soil, and dust samples for lead determination using FAA, GFAA, and ICP-AES techniques. Information on ordering this publication can be obtained from ASTM at the address listed at the end of this column.

Table 3 shows a summary of failures (outliers) for the three lead matrices by sample preparation technique and instrumental method used by participating laboratories. A series of Fischer's exact tests (nonparametric tests) were used to compare the various combinations of sample preparation techniques (hotplate and microwave) and instrumental methods (FAA, GFAA, ICP-AES) for statistically significant differences in the ability of the sample preparation/instrumental method combinations to meet ELPAT perfor-

TABLE 2. ELPAT Round Program Summary of Performance—All Laboratories Participated for Round 013

Sample Type	Sample No.	No. of Labs Rated	Acceptable Labs	Low Outlier	High Outlier
Paint chips (%)	1	366	343	7	16
	2	366	354	3	9
	3	366	332	25	9
	4	366	343	6	17
Soil (mg/kg)	1	315	300	6	9
	2	315	302	5	8
	3	315	305	3	7
	4	315	292	5	18
Dust wipes (μg)	1	340	325	9	6
	2	340	329	5	6
	3	340	326	7	7
	4	340	313	18	9

TABLE 3. ELPAT Program Labs Performance Summary for Round 013

			Paint Chips (%)				Soil (mg/kg)				Dust Wipes (μg)			
			Acceptable		Failures		Acceptable		Failures		Acceptable		Failures	
Instrument	Digestion	Method	N	%	N	%	N	%	N	%	N	%	N	%
FAA	Hotplate	NIOSH-7082/7105	186	95	10	5	93	97	3	3	270	98	6	2
		EPA-SW846-3050A	414	93	30	7	481	96	19	4	349	96	15	4
		Other-hotplate	121	95	7	5	61	95	3	5	88	96	4	4
	Microwave	EPA AREAL	8	100	0	0	10	83	2	17	0	0	0	0
		EPA-SW846-3051	51	98	1	2	52	100	0	0	34	85	6	15
		Other-microwave	24	100	0	0	8	100	0	0	31	97	1	3
	Other	All other	39	98	1	3	16	100	0	0	32	100	0	0
	—	—	4	100	0	0	0	0	4	100	0	0	0	0
GFAA	Hotplate	EPA-SW846-3050A	12	100	0	0	15	94	1	6	13	81	3	19
		Other-hotplate	4	50	4	50	4	100	0	0	4	100	0	0
	Microwave	Other-microwave	4	50	4	50	7	88	1	13	6	75	2	25
ICP-AES	Hotplate	NIOSH-7082/7105	50	96	2	4	30	94	2	6	70	97	2	3
		EPA-SW846-3050A	260	94	16	6	276	96	12	4	241	93	19	7
		Other-hotplate	24	100	0	0	12	100	0	0	39	98	1	3
	Microwave	EPA AREAL	12	100	0	0	8	100	0	0	8	100	0	0
		EPA-SW846-3051	57	95	3	5	60	100	0	0	46	96	2	4
		Other-microwave	12	100	0	0	8	100	0	0	11	92	1	8
	Other	All other	16	100	0	0	5	63	3	38	4	100	0	0
Lab-XRF	Other	All other	13	81	3	19	0	0	0	0	0	0	0	0
	—	—	11	92	1	8	9	75	3	25	0	0	0	0
Others	Hotplate	NIOSH-7082/7105	0	0	0	0	0	0	0	0	3	75	1	25
		EPA-SW846-3050A	8	100	0	0	8	100	0	0	4	100	0	0
		Other-hotplate	4	100	0	0	0	0	0	0	4	100	0	0
	Microwave	EPA-SW846-3051	6	75	2	25	8	100	0	0	4	100	0	0
		Other-microwave	4	100	0	0	4	100	0	0	0	0	0	0
	Other	All other	20	71	8	29	20	71	8	29	24	86	4	14
	—	—	0	0	0	0	0	0	0	0	4	100	0	0
—	Microwave	Other-microwave	4	100	0	0	0	0	0	0	0	0	0	0
Total			1368	94	92	6	1195	95	61	5	1289	95	67	5

— = Not reported.

mance limits.[13] To detect differences in performance, a criterion was then used where participating laboratories are classified into two groups: those that had no outliers on the four ELPAT samples of the matrix and those that had one or more outliers. Fischer's exact test was then repeated for each ELPAT matrix. No statistically significant differences in the ability of methods used by participating laboratories were detected for paint chips, soils, or dust wipes.

Table 3 shows that the predominant analytical methods were FAA and ICP-AES. Six laboratories used lab XRF, with three of the six laboratories unable to successfully analyze the paint chips and one of the six unable to analyze the soil samples. One laboratory used portable XRF, but was unable to successfully analyze paint chips. In the "other" category, three laboratories used ICP-MS, one used direct current plasma–atomic emission spectroscopy, one used dithizone spectrophotometry, and six used ASV. All the laboratories identified in the "other" category for analytical method performed well except for two laboratories analyzing for paint and soil using ASV.

ELPAT Round 13 Bias Analysis

Statistical significance tests are performed for investigating differences in bias among the principal sample preparation and instrumental methods and among the combinations of these two factors. The tests are performed for each matrix (paint chips, soils, and dust wipes) and ELPAT sample (sample numbers 1, 2, 3, and 4) whenever at least three laboratories pass the Grubb's outlier test.[14]

Analysis of variance (ANOVA) is used if the data meet the general assumptions of the ANOVA procedure, homogeneity of variances and normality. Bartlett's test is used for testing homogeneity of variances, and the Shapiro–Wilk test is used for testing normality.[15,16] If the ANOVA assumptions are violated, the Box–Cox transformation procedure is used to examine the data for possible transformations to correct the problem.[15] If the transformed data meet the ANOVA assumptions, then the ANOVA tests are performed on the transformed data. If homogeneity of variance and normality are not achieved by transformation of the data, then a nonparametric approach is used.

In instances where variances are homogeneous and data are normally distributed (either before or after transformation), a one-way ANOVA followed by the Scheffe's multiple comparison test procedure is performed to test for differences in bias among the combinations of the principal sample preparation techniques and instrumental methods.[17] A two-way ANOVA, followed by Scheffe's multiple comparison test procedure to test for any difference among principal sample preparation techniques and principal instrumental methods, is also performed. Two-way ANOVAs separate bias that may be the result of sample preparation, instrumental method, or interaction of these two factors.

In instances where ANOVA cannot be performed on either the original data or transformed data, one of two nonparametric tests is performed. If transformed data meet the homogeneity of variances but not the normality assumptions, then the Kruskal–Wallis rank sums test, followed by the Mann–Whitney–Wilcoxon test with a Bonferroni adjustment, is used.[18] If no transformation can equalize the variances, then the median scores test followed by the sign test with Bonferroni adjustment is used.[19]

Sufficient data were reported to make comparisons among three sample preparation techniques: NIOSH 7082/7105 (a nitric/hydrogen peroxide hotplate digestion), EPA SW846-3050A (a nitric/hydrogen peroxide hotplate digestion), and EPA SW846-3051 (a nitric/hydrochloric microwave digestion), and three instrumental methods: FAA, GFAA, and ICP-AES.

Identified biases on ELPAT round 13 are similar to biases found on previous ELPAT rounds. Two-way ANOVA procedures and Scheffe's multiple comparison test identified bias among sample preparation and instrumental method combinations for paint chip sample 2 and dust wipe sample 3. When sample sizes were large enough, results were significantly higher for laboratories using FAA than for laboratories using ICP-AES.

Two-way ANOVA procedures found small, statistically significant bias for one sample from both paint chip and dust wipes and attributed the biases to differences among instrumental methods. Paint chip sample 2 bias is about 8 percent of the corresponding ELPAT reference laboratory mean, with ICP-AES giving lower results than FAA. Dust wipe sample 3 bias is 8 percent of the corresponding ELPAT reference mean, with ICP giving lower results than FAA.

Over the first 13 rounds, NIOSH ELPAT bias studies have found evidence of bias among the principal instrumental methods used by participating laboratories for all three matrices: paint chips, soils, and dust wipes. The biases range from 2 percent to 26 percent of the corresponding reference laboratory mean, with the largest biases occurring at low lead levels for dust wipes, generally well below HUD and EPA lead standards. Although it was expected that differences among sample preparation technique would be found, NIOSH ELPAT bias studies have found no conclusive evidence of bias among the principal sample preparation techniques used by participating laboratories.

The results of NIOSH ELPAT bias studies are consistent with the 3 to 18 percent bias found by RTI in an EPA-sponsored collaborative test. In the EPA collaborative test, RTI followed up with participating laboratories and determined that some FAA laboratories failed to perform background corrections, which one would expect to result in a positive bias, and some ICP-AES laboratories failed to take matrix effects into account, which one would expect to result in a negative bias. NIOSH does not follow up with participating laboratories to determine if each participating ELPAT laboratory has performed all of the steps of the analytical method reported by the laboratory. However, NIOSH has advised both cooperating accrediting organizations that ELPAT bias could be the result of some ELPAT laboratories not following all steps of the analytical method. NIOSH has recommended that accrediting organizations emphasize FAA background correction and ICP-AES matrix effect minimization procedures when evaluating laboratory accreditation applications and in conducting on-site assessments for EPA NLLAP recognition. Laboratories should refer to the RTI collaborative test for a more complete discussion on how bias can be minimized.[12] Laboratory studies of field portable methods such as ultrasonic extraction and ASV of lead from environmental samples show promise as viable techniques. For a more complete discussion, laboratories can refer to a NIOSH study comparing ultrasonic extraction to hotplate and microwave digestion and field portable ASV to laboratory-based FAA on a series of laboratory-generated air samples and National Institute of Standards and Technology (NIST) standard reference materials (SRMs).

Lead Reference Materials

The ELPAT Program is designed to supplement, but not replace, a laboratory's internal quality control program. Use of materials of known lead content in suitable matrices is important in obtaining accurate and reliable lead results. Such materials should be used to validate methods when sample preparation techniques or instrumental methods are adopted or modified. In addition, the materials should be used for daily quality control charting of laboratory/analyst performance. ELPAT paint chip, soil, and dust wipe samples from completed ELPAT rounds are available from AIHA at the address listed at the end of this column. ELPAT materials differ from the certified reference materials listed below in Table 4. Either ELPAT materials are destroyed in one analysis (dust wipes), or the amount of material in bottles is limited to reduce the number of times that analyses can be repeated by laboratories reporting in the proficiency test round. NIST SRM values report lead as total lead, whereas ELPAT- and EPA-certified reference materials report extractable lead.

Certified reference materials are commercially available from NIST and from commercial reference material suppliers participating in the EPA/A2LA environmental reference material certification program.[21] The materials listed in Table 4 are useful for daily quality control of analyses and initial evaluation of methods associated with residential or steel structure lead abatement. Since work continues on developing additional reference materials, this list of certified reference materials is subject to change. Updated lists of available certified reference materials are available from NIST, EPA-EMSL Cincinnati, and A2LA at the addresses listed at the end of this column.

EPA NLLAP

Under Title X of the Housing and Community Development Act of 1992, EPA, in consultation with the Department of Health and Human Services, has the responsibility to review and determine if effective voluntary laboratory accreditation systems are in place. If EPA determines that effective voluntary laboratory accreditation systems are not in place,

TABLE 4. Certified Reference Materials

NIST Standard Reference Materials (SRMs)			Lead
RM	8680	Paint on fiberboard, nominal 1 to 2 mg/cm² lead	(to be released in 1995)
SRM	1579a	Powdered lead-based paint	11.995 ± 0.031%
SRM	2580	Powdered paint, nominal 4% lead	(to be released in 1996)
SRM	2581	Powdered paint, nominal 0.5% lead	(to be released in 1996)
SRM	2582	Powdered paint (low lead concentration)	208.8 ± 4.9 mg/kg
SRM	2589	Powdered paint, nominal 10% lead (will replace SRM 1579a)	(to be released in 1995)
SRM	2709	San Joaquin soil, baseline trace element concentrations	18.9 ± 0.5 mg/kg
SRM	2710	Montana soil, highly elevated trace element concentrations	5532 ± 80 mg/kg
SRM	2711	Montana soil, moderately elevated trace element concentrations	1162 ± 31 mg/kg
SRM	2586	Trace elements in soil containing lead from paint, nominal 500 mg/kg lead	(release date to be determined later)
SRM	2587	Trace elements in soil containing lead from paint, nominal 3000 mg/kg lead	(release date to be determined later)
SRM	2583	Trace elements in indoor dust, nominal 80 to 100 mg/kg lead	(to be released in 1995)
SRM	2584	Trace elements in indoor dust, nominal 1% lead	("Indoor" to be determined later) 1996
SRM	2579	Lead paint film on Mylar (set of 5)	3.53 ± 0.24 mg/cm²
			1.63 ± 0.08 mg/cm²
			1.02 ± 0.04 mg/cm²
			0.29 ± 0.01 mg/cm²
			less than 0.001 mg/cm²
		(intended for checking the calibration of portable XRF analyzers when testing for lead in paint coatings on interior and exterior building surfaces in the field)	
SRM	1648	Urban particulate matter	0.655 ± 0.008%
SRM	2704	Buffalo River sediment	161 ± 17 mg/kg (total lead by weight)
EPA/A2LA Certified Reference Materials			
Commercial supplier: RT Corp. through Fisher Scientific			
SRS014-50		Bag house dust	1914 ± 180 ppm*
SRS013-50		Paint blasting waste	643 ± 56 ppm*
SRS006-50		Paint sludge	753 ± 51 ppm*

*The concentrations of lead determined in a sample following digestion by EPA Method 3010, 3020, or 3050. All concentrations are expressed on a dry weight basis. The 50-g samples should be mixed well before removing subsamples.

EPA is responsible to establish a federal laboratory certification system.[22]

The EPA has established an NLLAP to recognize laboratories performing analysis associated with lead abatement. Published HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing require the use of NLLAP-recognized laboratories to ensure the consistency and quality of measurements of lead in paints, soils, and dusts.[4] NLLAP recognition of laboratories analyzing lead in paint chips, soils, and dusts has two requirements: (1) successful participation in proficiency testing using real-world matrices; and (2) laboratory accreditation including on-site assessment of laboratory operations. NLLAP requirements are based upon the recommendations of a Federal Interagency Taskforce on Lead Based Paint, a group of 17 federal agencies involved with lead issues, that recognition should be based upon both proficiency testing and laboratory accreditation.[23] Similarly, proficiency testing and laboratory accreditation requirements were also part of the recommendations for environmental laboratories of a 1991 National Conference on Laboratory Issues in Childhood Lead Poisoning Prevention sponsored by the Association of State and Territorial Public Health Laboratory Directors, the CDC, and EPA. NLLAP requirements for laboratories are based upon ISO/IEC Guide 25-1990, "General Requirements for the Competence of Calibration and Testing Laboratories,"[24] a guide already in use by many national laboratory accreditation systems worldwide.

Current NLLAP requirements permit the recognition of self-contained mobile laboratories providing that all ISO/IEC Guide 25-1990 requirements are met. In September 1995, the Federal Interagency Lead-Based Paint Taskforce agreed with a recommendation of the Defense Department, NIOSH, AIHA, and A2LA that NLLAP recognition should be expanded to include appropriate quantatative analyses that are conducted on site. To support this decision, in 1996 NIOSH will undertake a collaborative test of suitable field portable methods, and expand ELPAT bias analysis to better track the performance of field portable methods. While changes to NLLAP requirements have not been drafted, the International Standards Organization/International Electrochemical Commission Guide 25 1990's section on "Accommodation and Environment," especially sections 7.2, 7.3, 7.4, and 7.6, provides useful information for laboratories interested in recognition of on-site analyses.[24]

The ELPAT Program began providing paint chip, soil, and dust audit samples to evaluate laboratory performance in the fall of 1992 and has grown to over 300 participating laboratories. In December 1993 the first two laboratory accreditation organizations, A2LA and AIHA, were recognized by NLLAP. Laboratories interested in obtaining accreditation information, such as the program requirements, time needed to complete the process, and cost, should contact the recognized laboratory accreditation organizations. If other laboratory accreditation organizations are recognized, this information will be included in subsequent ELPAT columns.

Laboratory accreditation takes some time to achieve. Laboratory accreditation involves submittal of a description of a laboratory's quality system and manual to the accrediting organization and the on-site evaluation by NLLAP-qualified assessors of laboratory operations, including equipment, facilities, analytical methods, staff, and internal quality control.

Lists of laboratories that have performed successfully (rated proficient) in the ELPAT Program are prepared at NIOSH and are provided upon request to the public by the Lead Information Clearinghouse (1-800-424-LEAD). Lists of laboratories provided by the Lead Information Clearinghouse include all laboratories that successfully perform in the ELPAT Program and indicate the accreditation status of laboratories. Once a sufficient number of laboratories (approximately 100) across the country are recognized by NLLAP, only NLLAP-recognized laboratories will be recommended to the public through the list distributed by the Lead Information Clearinghouse. Given the capacity of cooperating laboratory accreditation organizations to perform on-site assessments, and the fact that already more than 100 laboratories are in the accreditation process, it is projected that this will occur this year. The ELPAT proficiency testing program is open to all interested laboratories. This means that laboratories outside the United States and laboratories that do not wish to be accredited can continue to participate in ELPAT. In addition, laboratories performing on-site analysis may participate in proficiency testing even though final NLLAP requirements to recognize on-site analysis have not yet been adopted.

Upcoming ELPAT Round Information

Round 14 ELPAT samples were sent to participants on February 1, 1996. The reporting date of the laboratories was March 4, 1996. The dust wipes were preserved with 0.5 ml of 3 percent hydrogen peroxide solution. This is to retard the formation of any fungal growth in the samples, and should not have any effect on the digestion and analysis of them.

Disclaimer

Mention of company names or products does not constitute endorsement by the CDC.

Information

A2LA laboratory accreditation, certified reference materials, and seminars on environmental lead laboratory accreditation:

American Association for Laboratory Accreditation (A2LA)
656 Quince Orchard Road
Gaithersburg, MD 20878
Phone: (301) 670-1377
FAX: (301) 869-1495

AIHA laboratory accreditation, ELPAT Program information, ELPAT sample orders, and seminars on environmental lead laboratory accreditation:

ELPAT Coordinator
American Industrial Hygiene Association (AIHA)
2700 Prosperity Avenue, Suite #250
Fairfax, VA 22031
Phone: (703) 849-8888
FAX: (703) 207-3561

Orders for the ASTM Standards on Lead-Based Paint Abatement in Buildings publication:

ASTM Customer Service
1916 Race Street
Philadelphia, PA 19103
Phone: (215) 299-5585
FAX: (215) 977-9679

Orders for NIST SRMs:

National Institute of Standards and Technology
Standard Reference Materials Program
Room 204, Building 202
Gaithersburg, MD 20899
Phone: (301) 975-6776
FAX: (301) 948-3730

Orders for RT Corporation commercial reference materials:

RT Corporation
2931 Soldier Springs
P.O. Box 1346
Laramie, WY 82070
Phone: (307) 742-5452
FAX: (307) 745-7936
or Fischer Scientific representative at (800) 766-7000.

Information on other EPA-certified reference materials:

EPA-EMSL
Quality Assurance Research Division
26 West Martin Luther King Drive
Cincinnati, OH 45268
Phone: (513) 569-7308
FAX: (513) 569-7115

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