# ASBESTOS INVESTIGATION REPORT

## Warehouse No. 213
## GSA/DLA Depot
## New Haven, Indiana

Prepared by ATC Associates

Gibraltar Design Project Number 97-0350.35

ATC ASSOCIATES INC.

7988 Centerpoint Drive Suite 100
Indianapolis, Indiana 46256-3345
317.849.4990
Fax 317.849.4278

May 10, 2001

Mr. Tom Leonard
Gibralter Design, Inc.
9102 N. Meridian Street, Suite 300
Indianapolis, IN 46260

Re: Results of Asbestos Investigation
**New Haven Depot - Warehouse No. 213**
New Haven, Indiana
ATC Project No. 86.58159.0001

Dear Mr. Leonard:

ATC Associates Inc. (ATC) performed a visual asbestos investigation on May 1, 2001, at New Haven Depot - Warehouse No. 213, located at 15411 Dawkins Road in New Haven, Indiana. This investigation was conducted in conjunction with ATC Proposal No. PE-2000-720B, dated December 21, 2000. AHERA Building Inspector Martin Upchurch (Indiana License No. 191912101) performed the investigation.

Warehouse No. 213 is a single level structure that was reportedly built in the 1940's. It has a concrete slab floor, poured concrete exterior walls and interior demising walls, and a wood roof structure. The exterior walls, demising walls and interior wood columns support the roof structure. The building is divided into four bays and is used to store raw materials.

The building has no heating or cooling systems. Ventilation openings are located in the exterior walls and roof of the building. The building has fire sprinkler systems for each of the bays that feed into the bays from valve rooms on the north side of the building. The sprinkler pipes are not insulated, and the systems appeared to be identical in each of the four bays.

The only insulation material observed in the building was foil-lined foam insulation on the sections of the valve rooms that extend into the warehouse bays. This material is not a suspected asbestos-containing material (ACM).

Each of the bays is numbered from 1 to 4, with the western-most bay being No. 1. Bays 1 and 4 are currently being used to store raw materials. Bays 2 and 3 are currently empty. On-site New Haven Depot personnel reported that these two bays are considered asbestos-contaminated because of materials that had been stored in them. ATC personnel, wearing disposable coveralls and respiratory protection, conducted a visual inspection of the two bays. No obvious signs of asbestos contamination were observed in either bay. The only material observed in the bays were small pieces of wood. The wood appeared to have come from pallets formerly used in the bays. Bay No. 2 did have two sealed metal drums sitting on a pallet that were labeled as possibly containing asbestos-contaminated waste. ATC did not open the drums to inspect their contents. Photographs of the interiors of the two vacant bays are included with this report.

The on-site New Haven Depot personnel also reported that Bays 2 and 3 were to be decontaminated prior to any work being performed in them. It is ATC's understanding that until such time as this is accomplished, anyone entering these two bays will be required by New Haven Depot to wear protective clothing and appropriate respiratory protection. Any equipment taken into these bays would also need to be decontaminated by HEPA-vacuuming or wet wiping prior to removal.

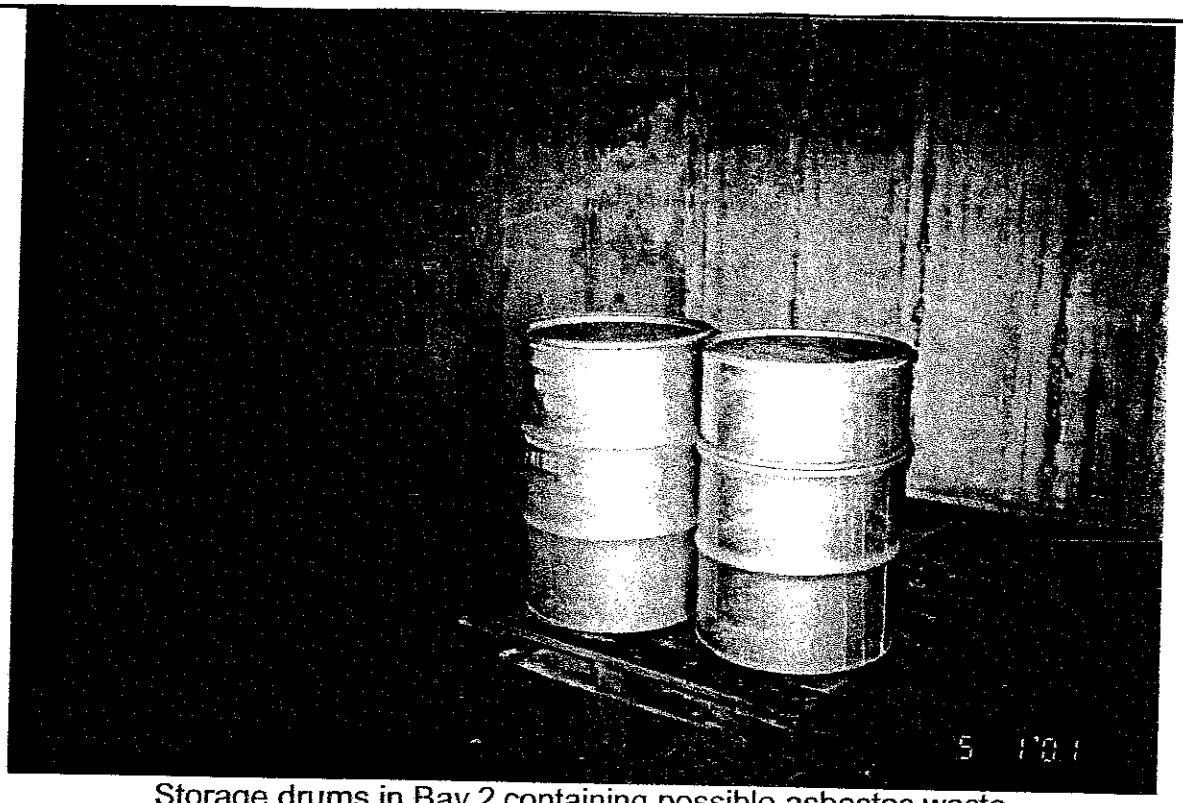
ATC has not been contracted to have any involvement with the decontamination of this building. After decontamination is completed air testing should be conducted to verify that airborne concentrations of asbestos are within acceptable limits. ATC would recommend a clearance limit of 0.01 fibers per cubic (f/cc) centimeter of air as an acceptable limit. This is the clearance level established by the EPA for asbestos projects conducted in schools.

**New Haven Depot - Warehouse No. 213**
15411 Dawkins Road
New Haven, Indiana

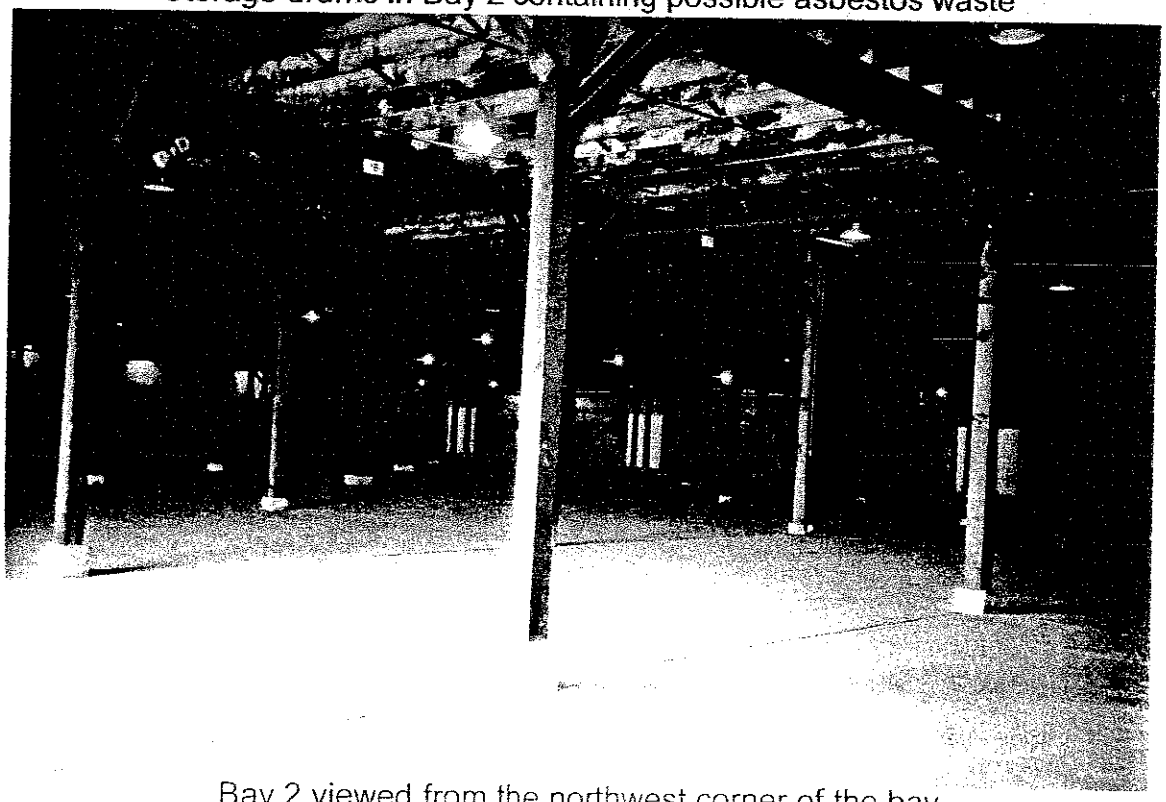
ATC Project No.:
86.58159.0001

Index for Photographs

| Photo No. | Photo Description |
|---|---|
| 1 | Storage drums in Bay 2 containing possible asbestos waste |
| 2 | Bay 2 viewed from the northwest corner of the bay |
| 3 | Interior of the north wall of Bay 2 with the valve room and fire sprinkler piping |
| 4 | Additional view of the valve room and fire sprinkler piping |
| 5 | Typical roof structure with fire sprinkler piping |
| 6 | Close-up view of roof structure with fire sprinkler piping hanger |



1 - Storage drums in Bay 2 containing possible asbestos waste



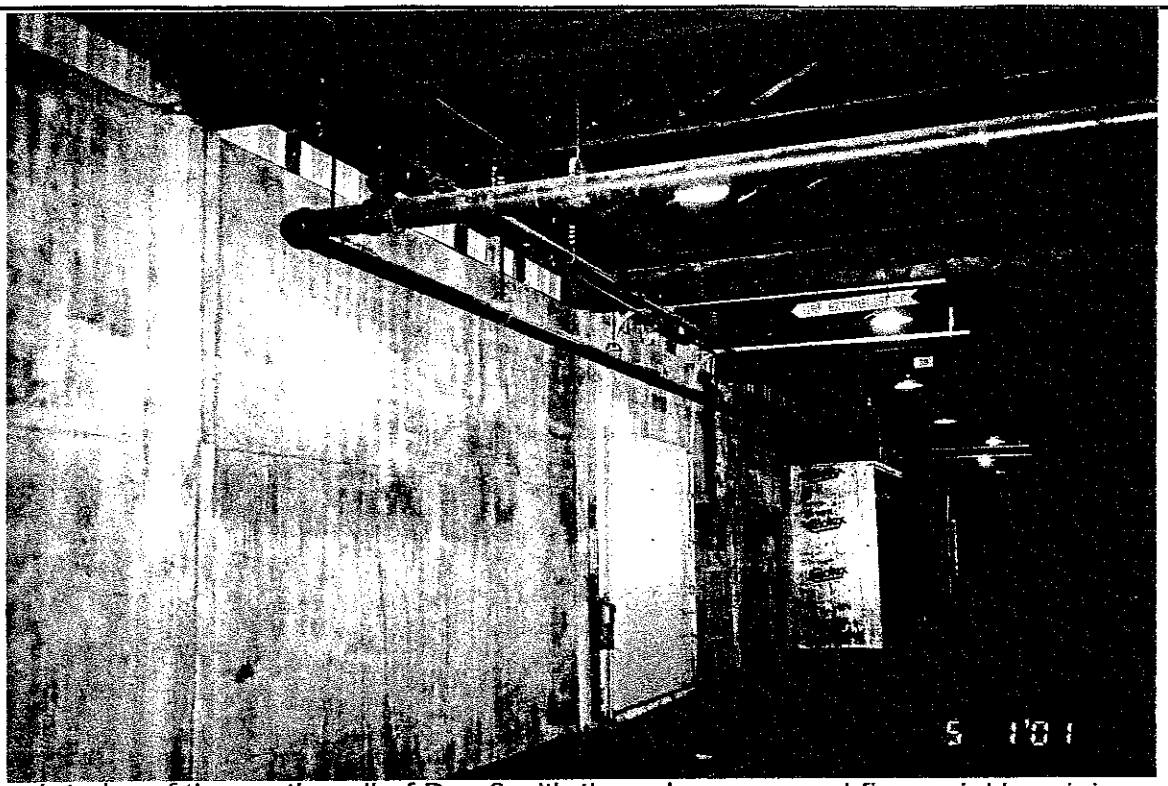
2 - Bay 2 viewed from the northwest corner of the bay

**ASBESTOS INVESTIGATION**
New Haven Depot - Warehouse No. 213
15411 Dawkins Road
New Haven, Indiana

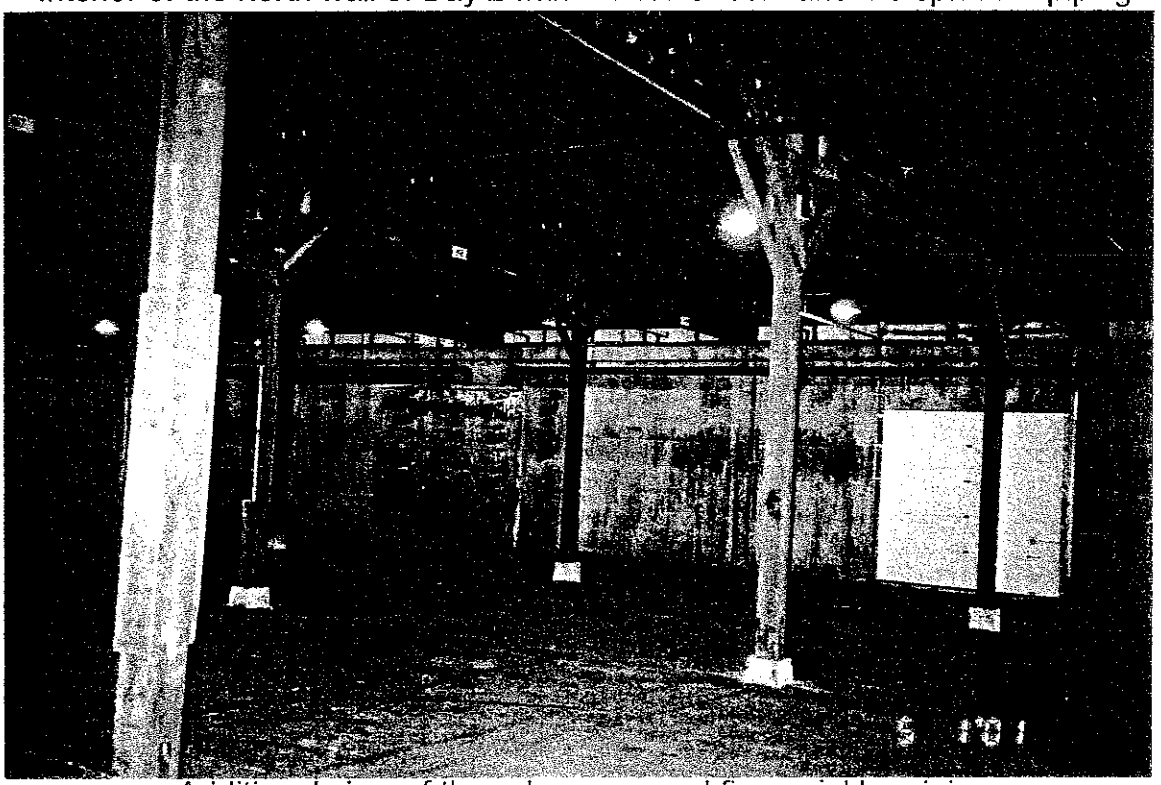
ATC Project No :
86.58159.0001

ATC

SITE PHOTOGRAPHS



3 - Interior of the north wall of Bay 2 with the valve room and fire sprinkler piping



4 - Additional view of the valve room and fire sprinkler piping

**ASBESTOS INVESTIGATION**
New Haven Depot - Warehouse No. 213
15411 Dawkins Road
New Haven, Indiana

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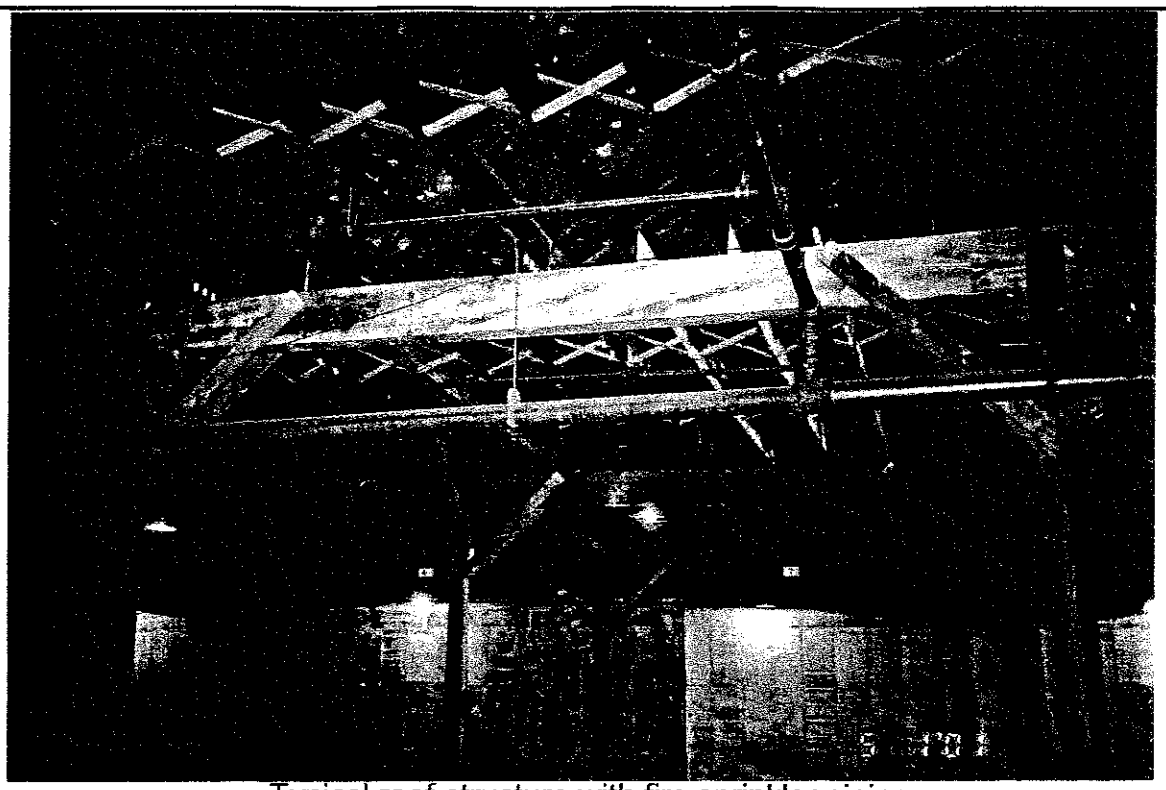
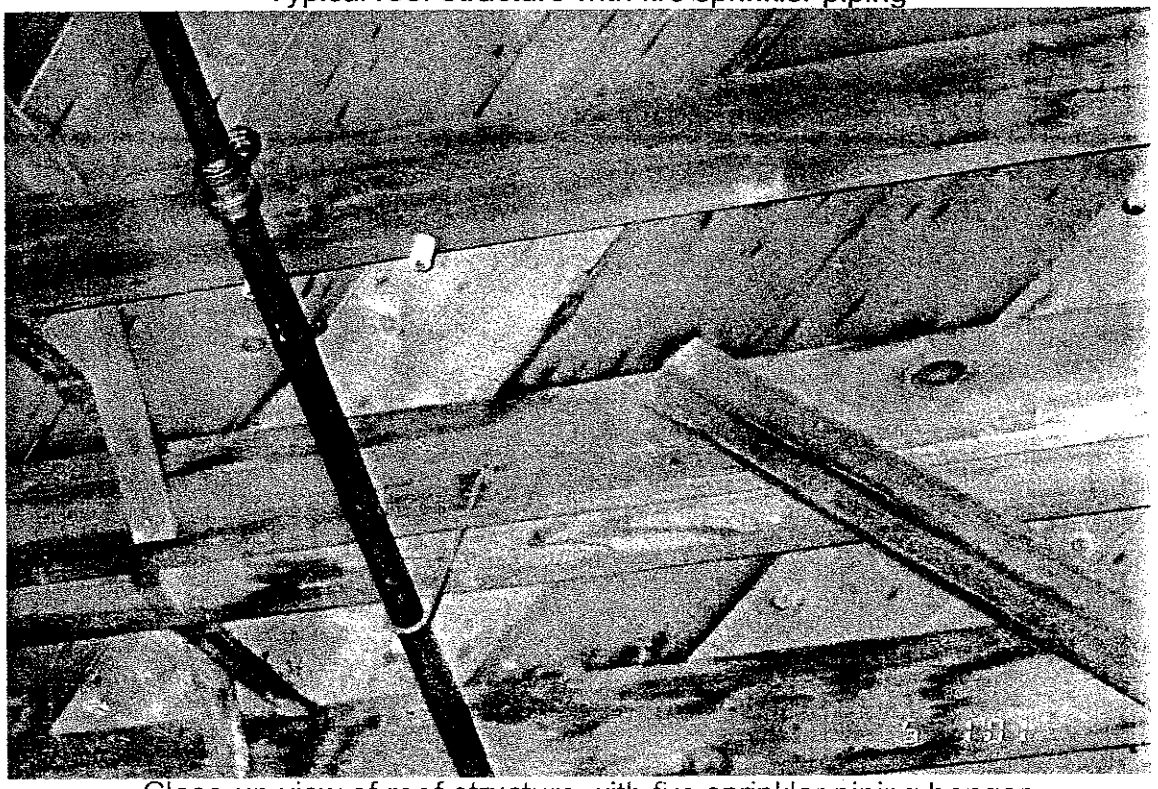
86.58159.0001

SITE PHOTOGRAPHS



5 - Typical roof structure with fire sprinkler piping



6 - Close-up view of roof structure with fire sprinkler piping hanger

**ASBESTOS INVESTIGATION**
New Haven Depot - Warehouse No. 213
15411 Dawkins Road
New Haven, Indiana

ATC Project No.:
86.58159.0001

ATC

SITE PHOTOGRAPHS

STATE OF INDIANA

DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT

105 South Meridian Street
INDIANAPOLIS, 46225

February 2, 1987

Mr. Sidney Beckwith
Adams Center Landfill
4637 Adams Center Road
Fort Wayne, IN 46806

Re: Disposal of Asbestos Waste from
New Haven Depot, Fort Wayne, Indiana

Dear Mr. Beckwith:

Office of National Defense Stockpile, FPRS, obtained an approval to dispose of three (3) pallets of asbestos particle board and 14 fifty-five gallon drums of asbestos contaminated clothing waste in a letter dated October 22, 1986. This approval letter is hereby amended as follows:

> The approved expiration date for disposal shall be changed from December 31, 1986, to May 31, 1987.

All other conditions of the approval letter shall remain unchanged.

If you have any questions, please contact Ms. Cassandra Ashley of the Solid Waste Management Branch at AC 317/232-8922.

Very truly yours,

Bruce H Palin for

David D. Lamm
Assistant Commissioner for
Solid and Hazardous Waste Management

CA/es
cc: Mr. Robert H. Bretz, Office of National Defense Stockpile, FPRS

DN

DNO

Kevin Minor

December 31, 1986

MEMORANDUM FOR FREDERIC BROOKS
ACTING MANAGER, NEW HAVEN DEPOT
OFFICE OF NATIONAL DEFENSE STOCKPILE (DNO-5-NH)

FROM: ROBERT H. BRETZ
MANAGER, ZONE 2
OFFICE OF NATIONAL DEFENSE STOCKPILE (DN-5)

SUBJECT: Asbestos Contaminated Material - Project DMZ-25007

This responds to your letter of August 28, 1986 requesting disposal procedures for asbestos contaminated storage aids, clothing and pallets left after your bagged asbestos repalletizing project.

I have discussed this matter with the State of Indiana Department of Environmental Management with the following results:

1. The 2,500 pallets may be disposed of as normal industrial waste after first being vacuumed thoroughly with a HEPA vacuum then wetting the pallets down. While wet, the pallets should be sawed with a chain saw to reduce their bulk and loaded into a large scrap container for disposal at a regular industrial landfill. (Advise this office on how many pallets, when cut up, constitute a cubic yard so we can estimate the cost of the disposal.)

2. The three pallets of particle board shall be wrapped and sealed in at least six mil plastic. This material will be disposed of at the Adams Center Landfill in Fort Wayne after we receive authorization from them. This action will also be approved by the State of Indiana. Asbestos warning labels shall be affixed.

3. The 14 fifty-five gallon drums containing asbestos contaminated clothing shall be sealed and labeled. The label must read: "Caution - Contains Asbestos - Avoid opening or breaking container. Breathing asbestos is hazardous to your health".

When authorization is received for final disposition of Items 2 and 3, you will be notified. At that time you are to load and deliver the correctly packaged items to:

Adams Center Landfill
4636 Adams Center Road
Fort Wayne, Indiana 46806

Our Customer Service Representative is Ms. Sheryl Noone, (219) 447-5585.

Keep me advised of your progress on the above.

cc: Official File: DN-5
Reading File: DN-5
DN
DNO-Reilly
DNI-5
DNO-5

DN-5:RHBRETZ:pcj:370-5383:12-31-86

DNO
Kev

December 31, 1986

Office of Solid and Hazardous Waste Management
105 S. Michigan
Indianapolis, Indiana 46225

Attn: Ms. Cassandra Ashley

RE: Disposal of Asbestos Waste From the New Haven Depot, New Haven, Indiana

Dear Ms. Ashley:

This confirms our phone conversation of December 30, 1986 and your advice on my request for an extension of time to prepare and deliver the subject asbestos waste to an authorized landfill (Adams Center of Fort Wayne).

A copy of the original authorizing letter from the State of Indiana Department of Environmental Management, dated October 22, 1986 is enclosed. Its authority expires December 31, 1986. We were unable to meet this deadline for packaging and disposing of the asbestos waste due to other project commitments of our personnel.

I hereby request your consideration of a time extension of thirty (30) working days from receipt of your anticipated authorizing letter so I can coordinate this disposition. The materials and description remain the same as my letter of September 8, 1986 and your response of October 22, 1986 (copies enclosed).

Sincerely,

/S/ ROBERT H. BRETZ

ROBERT H. BRETZ
MANAGER, Zone 2
Office of National Defense Stockpile, FPRS

Enclosures

cc: Official File: DN-5 DNO DNI-5
Reading File: DN-5 DNO-Reilly DNO-5
DNC-5 DNO-5-NH

DN-5:RHBRETZ:pcj:370-5383:12-31-86

December 31, 1986

Ms. Sheryl Noone
Customer Service Representative
Adams Center Landfill
4636 Adams Center Road
Fort Wayne, Indiana 46806

RE: Disposal of Asbestos Waste From the New Haven Depot,
New Haven, Indiana

Dear Ms. Noone:

Pursuant to our phone conversation of December 29, 1986, I am enclosing a completed "Generator's Waste Material Sheet", #T-52242, which was sent to us by your company. Also enclosed are copies of my original disposal request dated September 8, 1986 to the State of Indiana, Department of Environmental Management; their subsequent letter to you dated October 22, 1986 and my request of December 31, 1986 for a time extension.

It is anticipated, if approval of the time extension is granted, we would be able to deliver the subject waste to you within thirty days later.

Your Form WMI-50-A2 stipulates notification to the Administrator of the USEPA Regional Office. I phoned that office to obtain the format for reporting and was advised that this particular action did not require notifying the USEPA because it did not involve demolition.

I turst when an extension is granted, we can expedite this disposal with your company. Please advise me of the cost to dispose of the material assuming our truck will deliver it to your landfill.

Any questions may be directed to the undersigned.

Sincerely,
/S/ ROBERT H. BRETZ

ROBERT H. BRETZ
Manager, Zone 2
Office of National Defense Stockpile, FPRS

cc: Official FIle: DN-5 Reading File: DN-5 DNO DNO:Reilly
DNC-5 DNI-5 DNO-5 DNO-5-NH

DN-5:RHBRETZ:pcj:370-5383:12-31-86

# GENERATOR'S WASTE MATERIAL PROFILE SHEET
# MISCELLANEOUS SPECIAL WASTE

WASTE PROFILE SHEET CODE: T 52242

INSTRUCTIONS FOR COMPLETING THIS FORM ARE FOUND ON THE OPPOSITE SIDE. RETURN THIS FORM AND ATTACHMENTS TO:

A GENERAL INFORMATION

GENERATOR NAME: General Services Administration
FPRS, National Defense Stockpile

TRANSPORTER: Self

FACILITY ADDRESS: New Haven Depot
St. Road 14, 3 miles east of New Haven
New Haven, Indiana 46774

TRANSPORTER PHONE: (219) 749-5953

GENERATOR USEPA I.D.: None

GENERATOR STATE I.D.: None

TECHNICAL CONTACT: Kevin Reilly

TITLE: Industrial Hygienist

PHONE: (202) 535-7145

NAME OF WASTE: Asbestos contaminated wood particle board and clothing

PROCESS GENERATING WASTE: Repackaging and rewarehousing project.

B CLASSIFICATION OF WASTE MATERIAL (FROM INSTRUCTIONS):
Asbestos containing waste from cleaning.

DESCRIPTION OF MATERIAL (FOLLOW SUPPLEMENTAL INSTRUCTIONS):

Three (3) pallets of wood particle board that was used as dunnage between double bagged (plastic over burlap) pallets of 105 pound sacks of asbestos. (Amosite, Grade D-3 and Chrysotile, Grades 3K, Crude #1 and Crude #2.)

Fourteen (14) fifty-five gallon drums of asbestos,(same type as above), contaminated clothing and used HEPA filters in plastic bags inside the drums.

ATTACHMENTS (INDICATE BELOW WHAT ATTACHMENTS — ANALYSIS, STUDIES, PRODUCT SPEC SHEETS, ETC. — ARE MADE):

C SHIPPING INFORMATION

METHOD OF SHIPMENT: ☐ BULK LIQUID ☐ BULK SOLID ☒ DRUM (TYPE/SIZE) 14 Units-55 gallon, steel and 3 pallet loads

ANTICIPATED VOLUME: GALS. Approx. 18 CUBIC YDS. OTHER

PER: ☒ ONE TIME ☐ WEEK ☐ MONTH ☐ QUARTER ☐ YEAR ☐

**GENERATOR CERTIFICATION.** BY SIGNING THIS PROFILE SHEET, GENERATOR CERTIFIES THAT:

- UNLESS CLEARLY STATED ABOVE OR IN THE ATTACHMENTS, THIS WASTE MATERIAL IS NOT A "HAZARDOUS WASTE" AS DEFINED BY EITHER USEPA (40 CFR PART 261) OR THE STATE IN WHICH THE WASTE IS NOW LOCATED.
- THE WASTE DOES NOT CONTAIN POLYCHLORINATED BIPHENYLS OR 2, 3, 7, 8 - TCDD, UNLESS CLEARLY NOTED.
- THIS SHEET AND ITS ATTACHMENTS CONTAIN TRUE AND ACCURATE DESCRIPTIONS OF THE WASTE MATERIAL, AND ALL RELEVANT INFORMATION IN THE POSSESSION OF GENERATOR HAS BEEN DISCLOSED.

NAME: Robert H. Bretz

SIGNATURE: Robert H Bretz

TITLE: Manager, Zone 2

DATE: December 31, 1986

STATE of INDIANA

DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT

INDIANAPOLIS, 46225

105 South Meridian Street

Mr. Sidney Beckwith
Adams Center Landfill
4636 Adams Center Road
Fort Wayne, IN 46806

October 22, 1986

Re: Disposal of Asbestos Waste from
New Haven Depot, Fort Wayne, Indiana

Dear Mr. Beckwith:

This letter acknowledges the request for disposal dated September 8, 1986, from Office of National Defense Stockpile, FPRS.

Approval is hereby granted for disposal of three (3) pallets of asbestos particle board and 14 fifty-five gallon drums of asbestos contaminated clothing at the Adams Center Landfill, OPP No. 2-1, Allen County. The waste is to be covered by the end of the day.

The approval is granted subject to the following conditions:

1. The generator and/or hauler must contact you to notify you of the time of disposal and conditions of shipment.

2. Appropriate protective clothing should be used during handling and disposal to ensure proper protection from exposure to the material, especially from inhalation.

3. All asbestos must be sufficiently dampened to prevent airborne contamination during compaction.

4. Transite siding and panels containing asbestos shall be wrapped and sealed in at least six (6) mil plastic and all other asbestos shall be placed in at least six (6) mil plastic bags.

5. Containers shall be labeled with a proper warning label stating: Caution--Contains Asbestos--Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health.

6. If nuisance or pollution conditions are created, immediate corrective action will be taken by the operator.

7. Waste material accepted under this approval shall be included on the Special Waste Monthly Report to be submitted to this office monthly.

8. This approval will expire December 31, 1986.

This approval will be revoked if the landfill fails to maintain compliance with 330 IAC 4-1, et seq. (Regulation SPC-18). Any necessary local approval must be obtained, but is not required for this approval to be valid.

If you have any questions, please contact Ms. Cassandra Ashley of the Solid Waste Management Branch at AC 317/232-8922.

Very truly yours,

David D. Lamm
Assistant Commissioner for
Solid and Hazardous Waste Management

CA/cl
cc: Allen County Health Department
Mr. Steve Christman, SHWM Field Representative
Mr. Robert Ondrusek, DEM Air Management
Mr. Robert Bretz, Office of National Defense Stockpile, FPRS

September 8, 1986

Office of Solid and Hazardous Waste Management
105 S. Michigan
Indianapolis, Indiana 46225

Attn: Ms. Pat Carrasquero

Dear Ms. Carrasquero:

As discussed during our phone conversation Friday, September 5, 1986, we are requesting disposition authority for the following waste materials generated during a recent "packaged-asbestos", repalletizing project at our New Haven Depot near Fort Wayne:

2500 - Wooden Pallets - 48" x 54"

3 - Pallets of particle board; approximately 300 lbs.

14 - 55 gallon drums containing floor sweepings, debris, disposable coveralls, filters, dust masks, etc... The drums are sealed and marked "asbestos waste".

The bulk asbestos, part of our National Defense Stockpile Inventory, is in individual burlap bags, inside plastic bags. These bags were banded to the above mentioned flat pallets and subsequently repalletized into cardboard lined, wooden box pallets which can be stacked for more efficient storage. The pallets and particle board were thoroughly vacuumed, after the repalletizing, using a HEPA Nilfisk Vacuum cleaner. We propose sawing the pallets into sections to reduce the bulk but await your disposal instructions on all of the above before proceeding.

May we hear from you at your earliest convenience on this matter.

Very truly yours,

/S/ ROBERT H. BRETZ

ROBERT H. BRETZ
MANAGER, ZONE 2
OFFICE OF NATIONAL DEFENSE STOCKPILE, FPRS

cc: Official File: DN-5 DNC-5
Reading File: DN-5 DNI-5
DNO DNO-5
DNS - K. Reilly DNO-5-NH

DNS:RHBRETZ:pcj:370-5383:9-8-86

General Services Administration
Federal Property Resources Service
Casad Depot
Rt. 14 East
New Haven, IN 46774

September 9, 1986

MEMORANDUM FOR: KEVIN REILLY
INDUSTRIAL HYGIENIST
OFFICE OF NATIONAL DEFENSE STOCKPILE (DNO)

FROM: FREDERIC W. BROOKS
ACTING DEPOT MANAGER

SUBJECT: Asbestos Rebagging
Project #DMZ-25007

The Casad Depot received 3,469,800 lbs. of asbestos on 2500 flat pallets from the Memphis Army Depot. The condition of the pallets and the bags of asbestos prevented the material from being placed into permanent storage until a rebagging and repalletizing operation could take place.

The decision was made to place the overbagged asbestos into box pallets lined with fiberboard.

Depot personnel constructed 3800 box pallets and cut and scored 7600 pieces of fiberboard. Then they constructed an overbagging area using plastic sheeting.

The overbagging operation started May 27, 1986 and finished August 21, 1986. Maximum work crew consisted of five men; two lift operators and three laborers.

The asbestos is now in permanent storage with a space saving of 62,795 square feet.

General Services Administration
Federal Property Resources Service
Stockpile Management Zone 2
3200 Sheffield Avenue
Hammond, IN 46327

September 3, 1986

MEMORANDUM FOR KEVIN REILLY
INDUSTRIAL HYGIENIST
OFFICE OF NATIONAL DEFENSE STOCKPILE (DNO)

FROM: ROBERT H. BRETZ R.H. Bretz
MANAGER, ZONE 2
OFFICE OF NATIONAL DEFENSE STOCKPILE (DN-5)

SUBJECT: Asbestos Contaminated Material, Disposal

As discussed in our phone conversation of Wednesday, September 3, 1986, I am enclosing a copy of Acting Depot Manager, Fred Brooks' letter, dated August 28, 1986 requesting procedures for disposal of several items of waste. The items are left from the recent repalletizing project, DMZ-25007, at the New Haven Depot.

The pallets and particle board mentioned in Fred's letter have been vacuumed with a HEPA vacuum to clean any residue which may have contacted the wood. The pallets had double bagged (plastic over burlap) units of asbestos, sugar stacked and banded to them. I have contacted the "Office of Solid and Hazardous Waste Management" in Indianapolis to request disposal authority as "normal industrial waste". Mr. Richard Strong was not in but will return my call on Thursday, September 4. (For your information, they have a new phone number: (317) 232-4419.)

Chem-Waste will also return my call regarding the cost and removal details for the 14 drums of asbestos waste mentioned in Fred's letter.

I will keep you appraised on this matter.

Attachment

General Services Administration
Federal Property Resources Service
Casad Depot
Rt. 14 East
New Haven, IN 46774

August 28, 1986

MEMORANDUM FOR: ROBERT H. BRETZ
Manager, Zone 2

FROM: FREDERIC W. BROOKS
Acting Depot Manager

SUBJECT: Asbestos Contaminated Material

The following is a list of material that was generated by asbestos project DMZ-25007 and should be treated as asbestos contaminated material. Please advise of disposal procedures.

2500 wooden pallets -- 54' X 48"

14 - 55 gal. drums containing floor sweepings, debris, disposable coveralls, etc. Drums are sealed and marked "Asbestos waste".

3 pallets of particle board that came with the asbestos from Memphis. Approximately 800 lbs.

## RECORD OF SAMPLES TRANSMITTED AND REQUEST FOR ANALYSES

| 1. DATE | 2. PURCHASE OR SALES CONTRACT NO. | 3. EX VESSEL (If any) | 4. PROGRAM | 5. RELEASE NO. |
|---|---|---|---|---|
| 6/11/86 | N/A | N/A | NDS | N/A |

6. MATERIAL (Grade and/or type)
Warehouse Dust

7. NUMBER AND ADDRESS OF REGION CONCERNED *
GSA/FPRS/OSM/Zone 2 Office
3200 Sheffield Avenue
Hammond, Indiana 46327

8. NAME AND ADDRESS OF ANALYST *
Clayton Environmental Consultants
Raritan Center, 160 Fieldcrest Avenue
Edison, New Jersey 08837

9. NAME AND ADDRESS OF MATERIAL SUPPLIER/PURCHASER *

TO THE ANALYST — It is requested that analyses, including preparation if necessary, in accordance with stated provisions and specifications, be made on samples identified below.

| ANALYST'S SAMPLE NO. 10. | GOVERNMENT SAMPLE NO. 11. | LOT NO. AND MARKS 12. | NUMBER AND TYPE OF UNITS 13. | WEIGHT OF LOT 14. |
|---|---|---|---|---|
| | | see Page 2<br>Eight(8) Samples | | |

15. MANNER TRANSMITTED
- ☐ TAKEN BY ANALYST
- ☐ DELIVERED DIRECT
- ☒ BY MAIL
- ☐ BY EXPRESS

16. DETERMINATION
- ☐ ALL CHEMICAL AND PHYSICAL REQUIREMENTS OF SPECIFICATION NO.
- ☒ THE FOLLOWING ONLY: Asbestos

17. AUTHORITY
- ☐ SERVICE CONTRACT NO.
- ☐ OPEN MARKET BASIS FOR WHICH NO CONTRACT EXISTS — telecon 5/30/86 Reilly
- ☐ BY AGREEMENT WITH SUPPLIER
- ☒ OTHER (Specify)

18. PURPOSE
- ☐ GOVERNMENT CONTROL
- ☐ UMPIRE
- ☒ GENERAL INFORMATION
- ☐ OTHER (Specify)

19. PORTIONS OF THE PREPARED SAMPLES SHALL BE DISTRIBUTED BY ANALYST TO
- ☐ UMPIRE (Specify)
- ☐ OTHER (Specify)
- ☐ MATERIAL SUPPLIER/ PURCHASER

| 20. DATE SAMPLED | 21. PLACE SAMPLED | 22. DISPOSITION OF SAMPLES |
|---|---|---|
| 6/3-9/86 | Casad Depot, New Haven, IN. | discard |

23. REMARKS (If more space is required, continue on separate sheet)
**16 Determine presence of asbestos. If additional information required, contact Mr. Kevin Reilly, Washington, D.C. 202-535-7145

## 24. DISTRIBUTION

| NO. | COPIES OF THIS FORM | NO. | ANALYSIS CERTIFICATES | ** | INVOICE (IN DUPLICATE) |
|---|---|---|---|---|---|
| ORIGINAL AND TWO (2) | Mail to Analyst Shown Above (If possible, one of these copies shall accompany the sample. One copy shall be completed by analyst and sent to region shown in item 7.) | | ~~MATERIAL SUPPLIER/PURCHASER~~ | | MATERIAL SUPPLIER/PURCHASER |
| | | 1 | GENERAL SERVICES ADMINISTRATION (FPRS) | | *** GENERAL SERVICES ADMINISTRATION REGION |
| 1 | DIRECT TO REGION IN ITEM 7 | 3 | REGION SHOWN IN ITEM 7 | | |
| 1 | GENERAL SERVICES ADMINISTRATION (FPRS) WASHINGTON, DC 20406 FPRS | 1 | WITH INVOICE | | OTHER (Specify) |
| 1 | RETAINED BY TRANSMITTER * | | OTHER (Specify) GSA/FPRS/OSM Dir. Insp. Div. DNI 18th & F Street, NW, Washington, D.C. 20406 Attn: Kevin Reilly | | |

| 25. REQUESTED BY (Signature and title) | 26. RESULTS REQUIRED BY (DATE) | 27. SAMPLES RECEIVED | |
|---|---|---|---|
| Norman L. Miller/CAS | 7/5/86 | A. BY (Signature) | B. DATE |

GENERAL SERVICES ADMINISTRATION

* INCLUDE ZIP CODE
** INDICATE WHICH ONE IS APPLICABLE
*** FULL ADDRESS

GSA FORM 1269 (REV. 10-73)

# SAMPLE AND ANALYSIS SHEET

Zone 2

Stockpile Location CASAD DEPOT

Warehouse, Section and Bay Number 211 SECT. 2

Type of Commodity ASBESTOS

Name of person conducting sampling NORMAN MILLER

Pump calibrated prior to sampling: Yes ☒ No ☐

Calibration Technique Bubble Tube (bubble tube, rotometer, calibration case)

Analytical results

Firm, plant, facility owner or other contracting No.

Results sent by telegram

Telephone

Report

Date of findings

Name of Company Completing Analysis

## AIR SAMPLING

| Date | Sample No. | Sample: Area ☐ Personal ☐ If area describe If personal Name | JOB/Process Description | Start Time | Stop Time | Initial Flow Rate (l/min) | Final Flow Rate (l/min) | Ave. Flow Rate (l/min) | Total Sampling Time (min) | Tot. Vol./ Liters | Analysis mg/m³ or fibers/cc |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1986 6/3 | 2-00 71 NH | WAREHOUSE 211 -2- BAY 64 | OVERBAGGING (OUTSIDE AREA) | 8:00am | 11:20 am | 2.0 | 2.0 | 2.0 | 200 | | |
| 6/3 | 2-00 72-NH | FRED BROOKS, FORKLIFT OPERATOR | REMOVING BOX PALLET TO CLEAN AREA | 8:00am | 11:20 am | 2.0 | 2.0 | 2.0 | 200 | | |
| 6/4 | 2-00 73-NH | WAREHOUSE 211-2-75 | IN AREA WHERE THE FLAT PALLET WITH BAGS ARE TO UNLOAD | 8:00 am | 11:20 am | 2.0 | 2.0 | 2.0 | 200 | | |
| 6/4 | 2-00 74-NH | DALE ARNOS, FORKLIFT OPERATOR | MOVING PALLETS TO UNLOADING AREA | 8:00am | 11:20 am | 2.0 | 2.0 | 2.0 | 200 | | |
| 6/5 | 2-00 75-NH | WAREHOUSE 211-2-73 | IN AREA BETWEEN BOX PALLETS ARE BEING LOADED | 8;00am | 11:20am | 2.0 | 2.0 | 2.0 | 200 | | |
| 6/5 | 2-00 76-NH | JAMES NEESE, LABOR | PUTTING BAGS IN BOX PALLETS | 8:00am | 11:20am | 2.0 | 2.0 | 2.0 | 200 | | |
| 6/9 | 2-00 77-NH | ROBERT GRIMES, LABOR | PUTTING BAGS IN BOX PALLETS | 8:00am | 11:20am | 2.0 | 2.0 | 2.0 | 200 | | |
| 6/9 | 2-00 78-NH | RICHARD WHITMAN, LABOR | PUTTING BAGS IN BOX PALLETS | 8:00am | 11:20am | 2.0 | 2.0 | 2.0 | 200 | | |

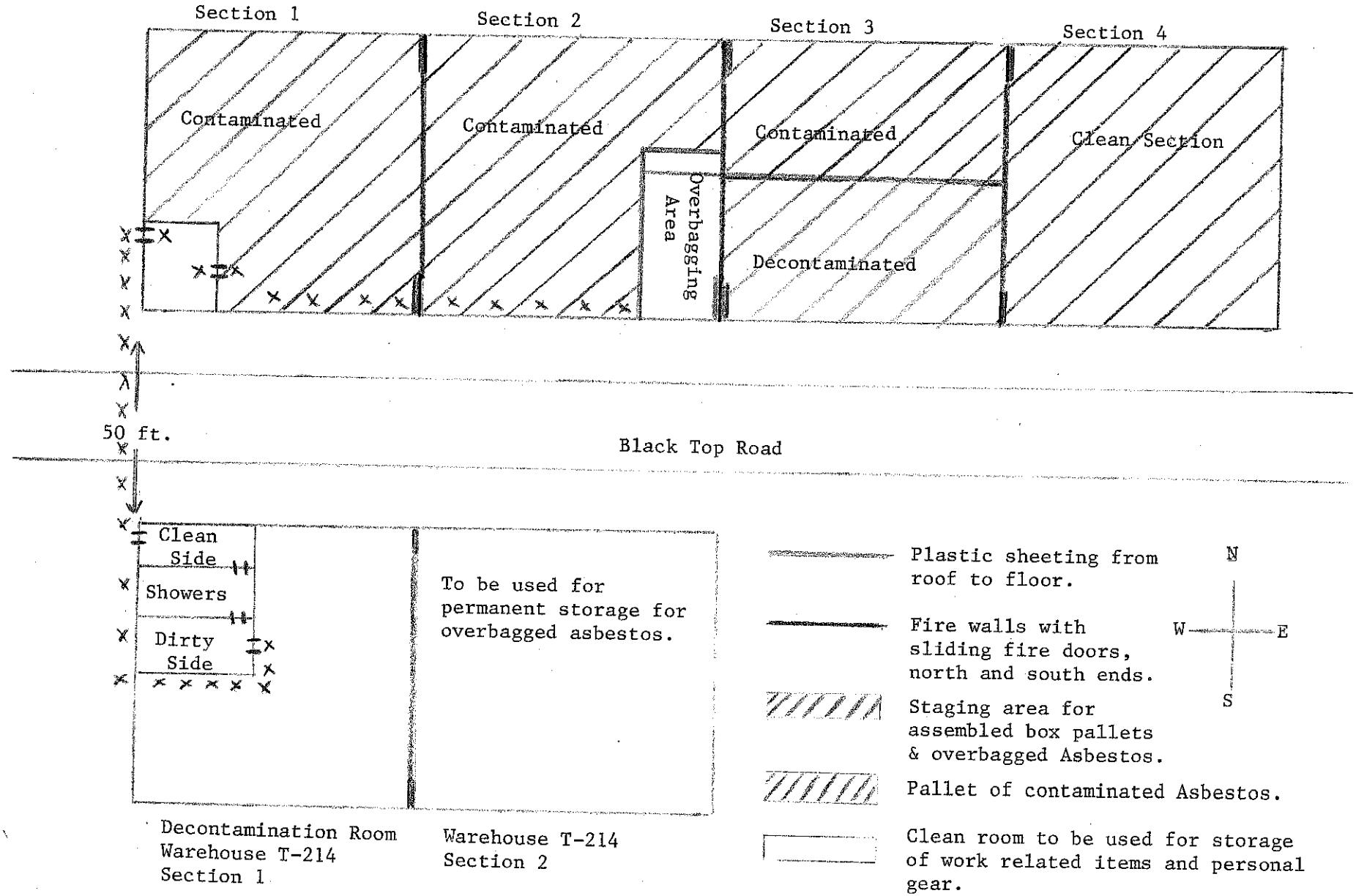
Submitted by: Norman Miller date: 6/9/86

Comments *

Total Volume Sampled ( ) liters = (Ave. Flow Rate (l/min) x Time (min) sampled.

* Place comments on reverse side, identify by sample No. Fill out sheet completely and record data collected in the appropriate section. The sample No. will consist of a multiple digit numbering code, distinct for each zone.

WAREHOUSE T-211




JwB
4-7-86

3 1 MAR 1994

DNSC-O (Kevin Reilly/607-3227/jnp)

SUBJECT: Asbestos Cleanup Bldg. 210, New Haven -- CLARIFICATION

TO: DNSZ-HMD

1. This memo is to clarify my memo of 24 March 1994, same subject.

2. The application of floor sealant should be applied to the large cracks and expansion joints of the warehouse section. The entire floor need not be sprayed.

3. This should clarify previous instructions if there are any other questions please contact me on 607-3227.

/s/ KEVIN REILLY

F. KEVIN REILLY
Environmental Protection
Specialist

cc: DNSC-O, DNSC-OL, DNSC-DD
DNSC-O (K. Reilly|NH2)

YELLOW

24 MAR 1994

DNSC-O (Kevin Reilly/607-3227/jnp)

SUBJECT: Asbestos Cleanup Bldg. 210 at the DNSC New Haven Depot

TO: DNSZ-HMD

1. The cleanup of warehouse sections in building 210 has proceeded nicely and we are nearly completed. The overhead area is completely clean however, it appears that some minimal residual of asbestos is lodged in the expansion joints and large cracks of the warehouse floor and additional vacuuming will not remove this material.

2. I have had discussions with your QAS, Allen Bixler and the Depot Manager, Fred Brooks and we agree that the best approach is to apply a good floor sealant.

3. This "sealant" should be applied to the entire floor with emphasis on the expansion joints and large cracks. All corners should also receive additional sealant. This material from my understanding can be sprayed, rolled and/or poured on. Your Depot manager I am sure will use the best method or methods to accomplish the results we want.

4. Please proceed with this application and finalize this project. Should you have any questions please contact me.

/s/ KEVIN REILLY

F. KEVIN REILLY
Environmental Protection
Specialist

cc: DNSC-OL, DNSC-O, DNSC-DD
DNSC-O (K. Reilly/NHASB/73227)

/s/ KERMIT L. FRYE, JR

DEFENSE LOGISTICS AGENCY

# Inter-Office Memorandum

IN REPLY REFER TO DNSZ-HM (Robert H. Bretz/219-937-5383/rck) 29 Jan 93

SUBJECT: Asbestos Sampling, DNSZ-HMSB, New Haven Depot

TO: DNSC-O
ATTN: Kevin Reilly

1. I am, herewith, distributing copies of an asbestos sampling plan, dated 29 January 1993, prepared at my request by Clifford Hineman, QAS, at the Warren, Ohio depot DNSZ-HMQD.

2. Unless those receiving copies recommend constructive changes to this plan by 4 February 1993, we will proceed as detailed.

3. The Hammond Zone Contracting Officer, Cornel Holder, is to place a contract with Clayton Environmental Consultants, Inc. of Edison, New Jersey. The "Clayton" laboratory is to analyse 96 samples sent to them as instructed in Hineman's memo.

4. The brushes and sample containers may be purchased using funds from the Warren Depot imprest fund.

5. Any questions may be directed to Allen Bixler (219) 937-5274 or the undersigned.

Robert H. Bretz

ROBERT H. BRETZ
Zone Administrator
Defense National Stockpile Zone (HM)

BLDG 211 - ALL SAMPLES OK - NO CLEAN UP NECESSARY

210 - 43,200 ☑ REQUIRE RECLEANING.

AREA to BE CLEANED AND RESAMPLED PRIOR to RELEASE FOR UNRESTRICTED USE.

Kelly

DLA FORM 111 JUL 82 PREVIOUS EDITION MAY BE USED UNTIL EXHAUSTED

29 Jan 93

TO: Robert Bretz, Zone Administrator DNSZ-HM
Allen Bixler, Chief Quality Assurance Div. DNSZ-HMQ

FR: Clifford Hineman, Qaulity Assurance Specialist DNSZ-HMQD

SUBJECT: sampling New Haven Depot bldgs. T 211 and T 210 for asbestos (updated 29 Jan 93)

On 26 Jan 93 I received information requesting sampling be performed as required to determine presence and/or amount of asbestos that may be remaining in the above listed warehouses and sections. These two warehouses are to be emptied of all contents and returned to GSA.

Per telecon with Mr. Bretz on 27 Jan, I was informed that a sample plan similar to that used to close out the Marion, Ohio depot in 1986 was desired.

A telephone conversation with Mr. Fred Brooks, Depot Manager at New Haven Depot gave the following information:

Warehouses T 211 and T 210 each have 4 sections. Some sections are known to contain or have contained asbestos. Information was inconclusive as to whether or not the other sections have contained asbestos in the past.

Warehouse T 211
Section # 1 - currently empty, has been used for asbestos storage.
# 2 - currently empty, has been used for asbestos storage.
# 3 - currently used for asbestos storage.
# 4 - currently empty, no record of asbestos storage.

Warehouse T 210
Section # 1 - used by other agency, no record of asbestos storage.
# 2 - currently empty, has been used for asbestos storage.
# 3 - currently empty, has been used for asbestos storage.
# 4 - used for storage of tin, tantalum.... no record of asbestos

Currently, plans call for me to travel to the New Haven Depot on 08 Feb. On arrival, I would like to take a over view of the warehouses to confirm plans. Sampling will take place on 09, 10, and 11 Feb. with 12 Feb. used to return to the Warren Depot.

In order to determine the amount of asbestos that remains, if any, in the various sections, bulk sampling of remaining dust must be performed and analyzed. These samples will indicate whether or not the section is contaminated with asbestos fiber and give an indication as to the level.

In order to determine the level of any possible contamination as well as to determine non-contaminated areas, all eight (8) sections will be sampled by bulk methods. Each section will be divided into six (6) equal areas. Each these six (6) areas will be sampled at ceiling areas and the coresponding a directly underneath at floor level. This would require a total of 96 bulk samples (8 sections with 12 samples each).

Each sample would be accumulated using a clean small 1 to 2 inch soft brist brush to gather the sample onto a clean sheet of paper then transfered into marked self-sealing plastic bag. This is to prevent contaminating the outs of the plastic sample bag. Samples would be gathered over many areas withi each sample zone with emphasis on areas where fibers may lodge such as the tops of beams, pipes, and wiring as well as cracks, corners and so on.

The attached warehouse diagrams show the warehouse floor areas and sample areas.

These samples will be collected and shipped to a certified laboratory for analyses to determine asbestos fiber content expressed by percentage. For th type of analyses, results less than 1% are reported as less than 1% and not percentage points.

Clayton Environmental Consultants, Inc. of Edison, New Jersey (908-225-6040) has been used extensively in the past for analyses of asbestos samples. A call to them on 29 Jan 93 obtained a quote of $22.00 per sample.

96 samples at $22.00 each totals $2112.00.

The only cost other than the laboratory charges would be for 96 brushes so that each sample would have a clean brush to prevent contamination of sample The cost would be minimal.

The collection of ceiling level samples will also require the use of a lift truck, safety pallet, and lift truck operator.

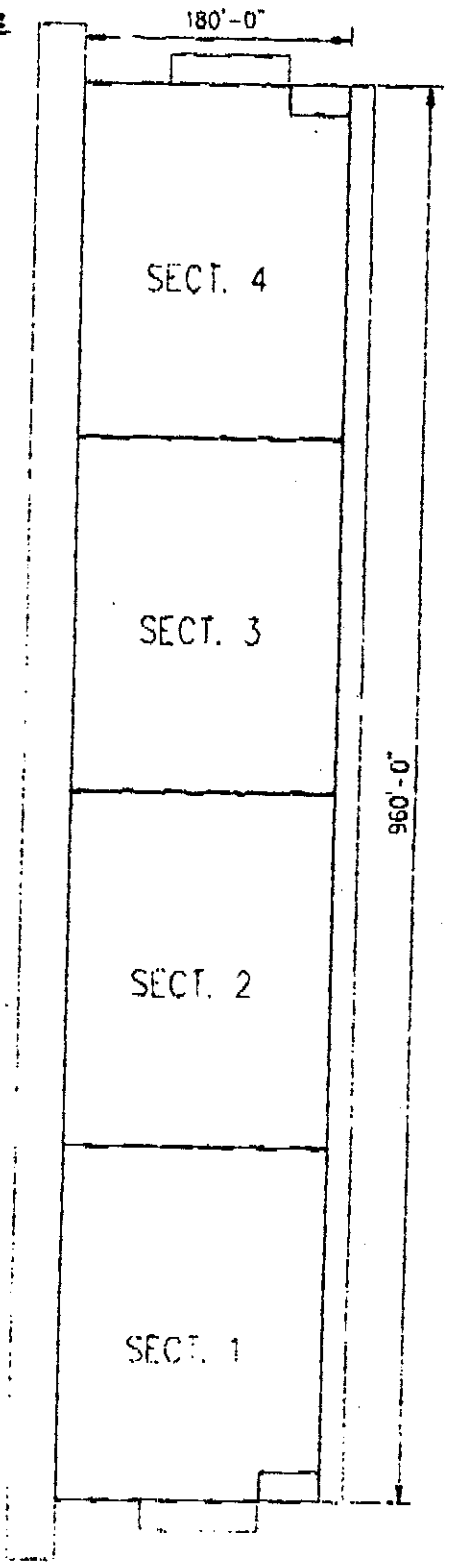
If you have any further questions, please call.

Clifford E. Hineman, QAS
29 Jan 93

**Defense National Stockpile Depot** **New Haven, Indiana**

**BUILDING PLAN:**

**Building #** **T210(IN0612NH)** [redacted]

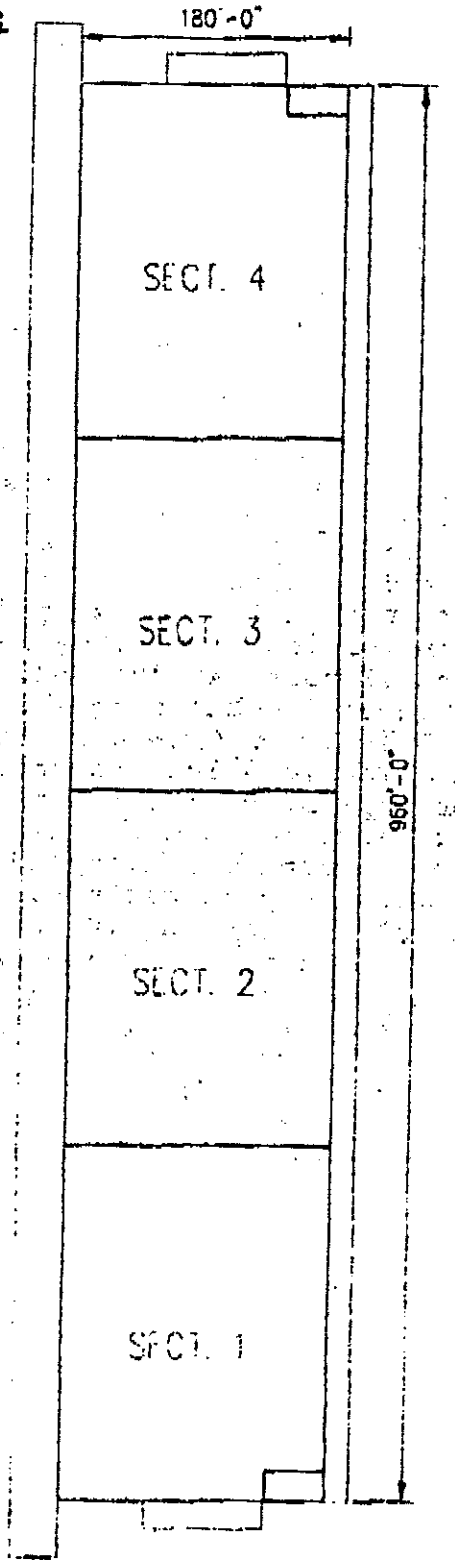


Defense National Stockpile Depot New Haven, Indiana

**BUILDING PLAN:**

Building # T211(IN0613NH)

[redacted]



CSA-FSS CASAD DEPOT
NEW HAVEN, IND. 46774

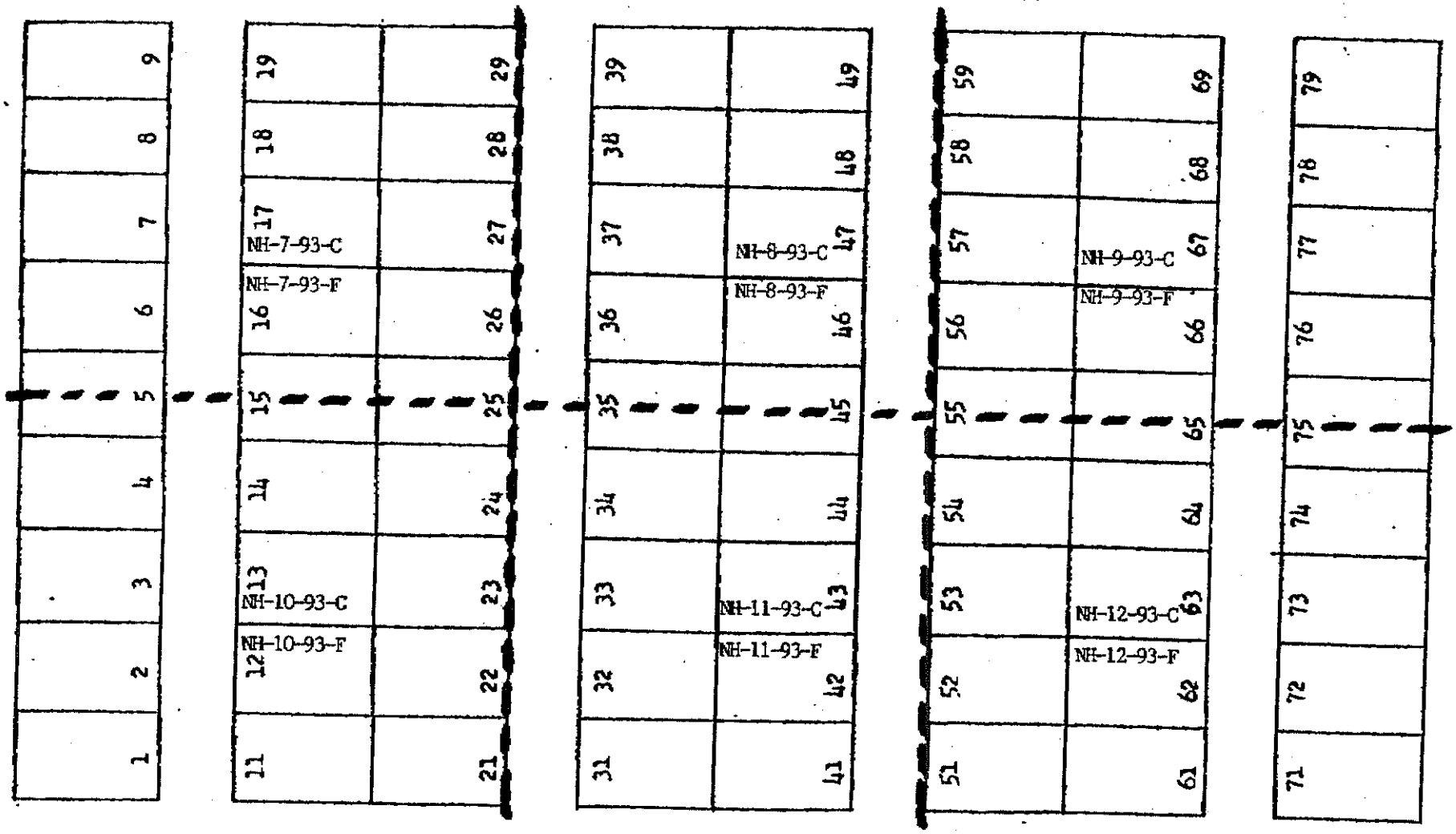
Bldg 210

Section 2

C indicates ceiling sample
F indicates floor sample

THIS IS A TYPICAL WAREHOUSE SECTION
EACH WAREHOUSE HAS FOUR (4) SECTIONS WITH FIREWALLS SEPARATING SECTIONS.
EACH SECTION MEASURES APPROXIMATELY 180' X 240'

TYPICAL WAREHOUSE SECTION FLOOR PLAN



GSA-PSS CASAD DEPOT
NEW HAVEN, IND. 46774

Bldg 210
Section 3

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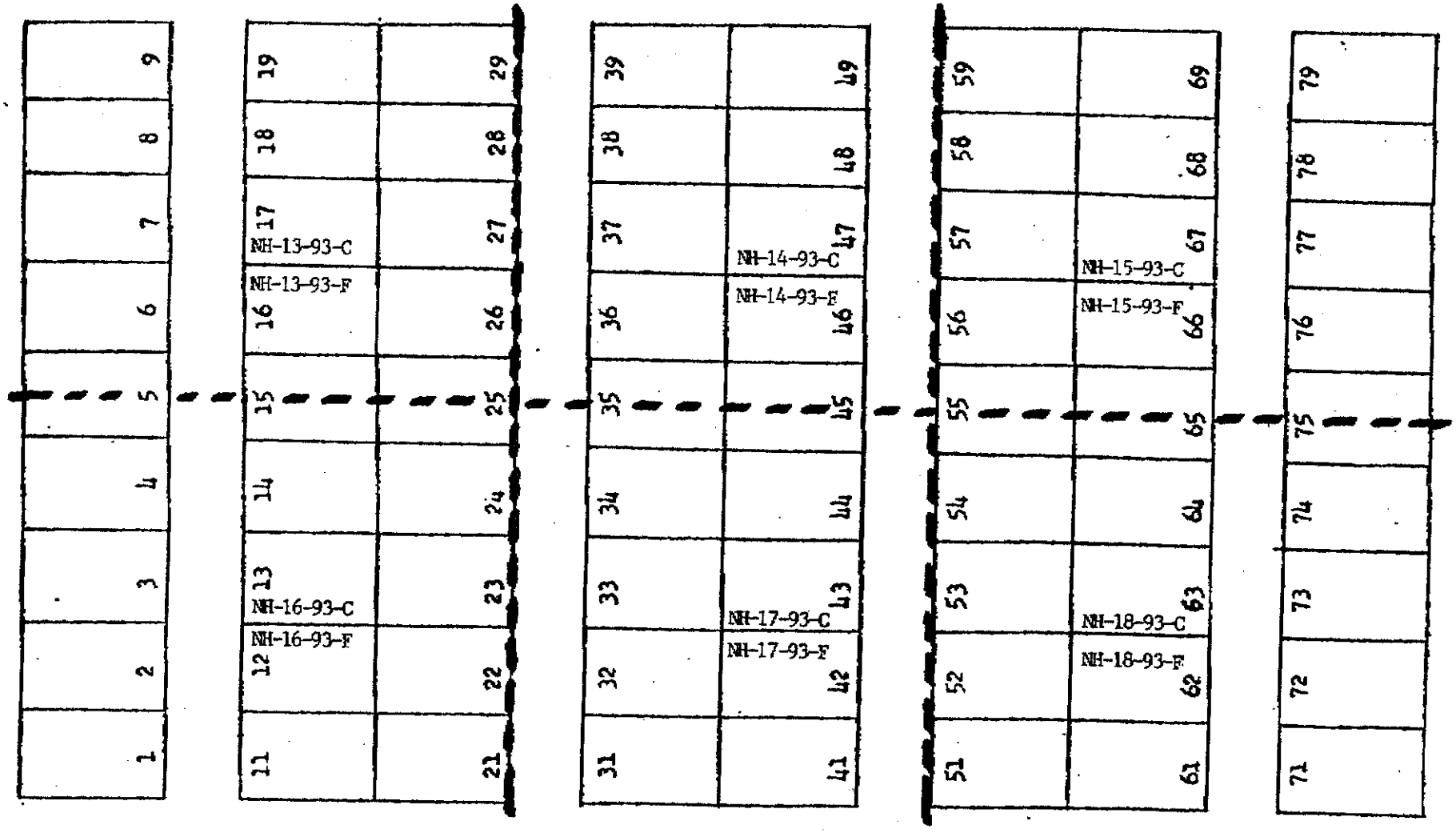
TYPICAL WAREHOUSE SECTION FLOOR PLAN



GSA-FSS CASAD DEPOT
NEW HAVEN, IND. 46774

Bldg 210

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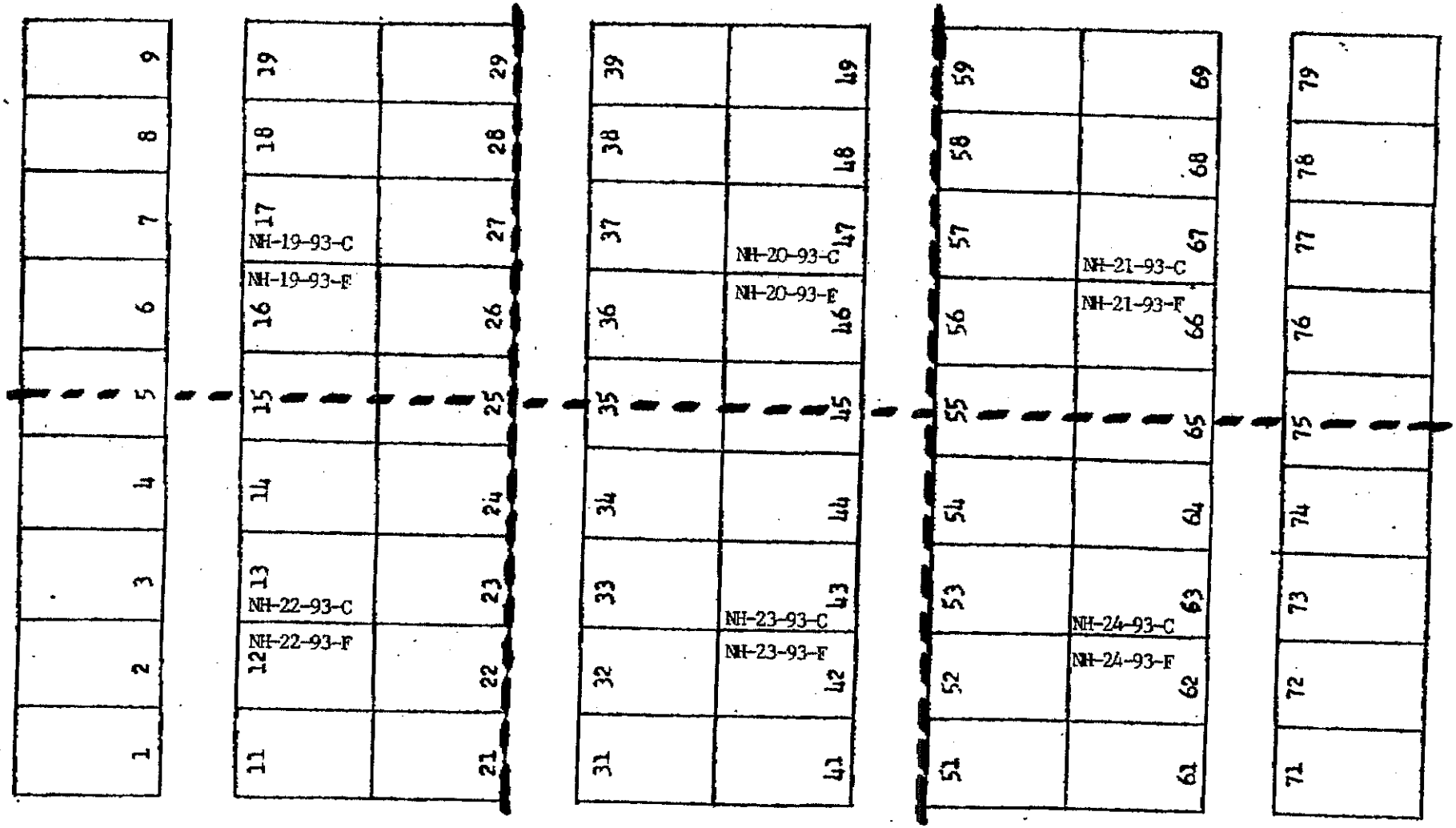

GSA-FSS CASAD DEPOT
NEW HAVEN, IND. 46774

Bldg 211
Section 1

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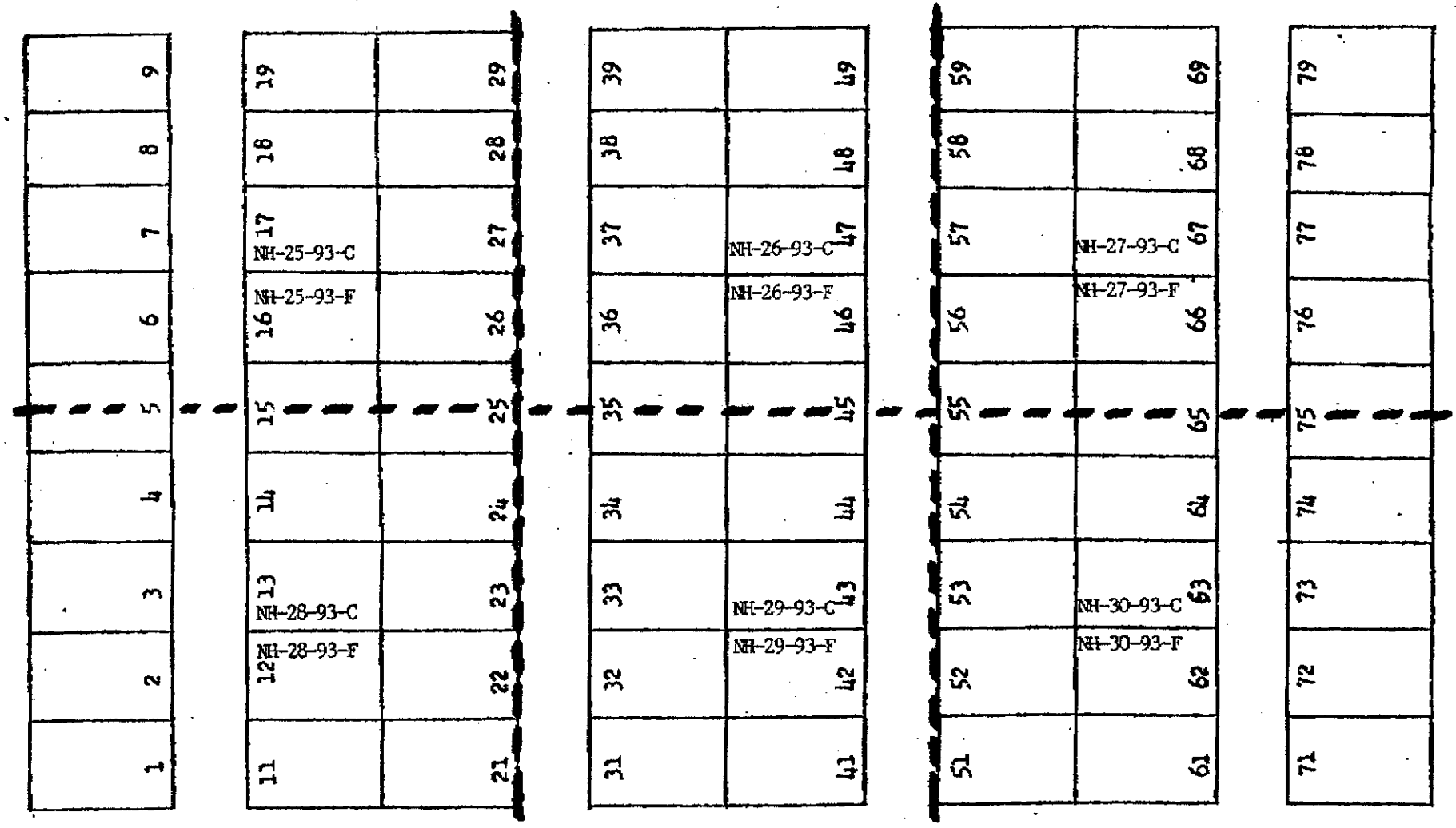
TYPICAL WAREHOUSE SECTION FLOOR PLAN



GSA-FSS CASAD DEPOT
NEW HAVEN, IND. 46774

Bldg 211
Section 2

C indicates ceiling sample
F indicates floor sample

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WITH FIREWALLS SEPARATING SECTIONS.
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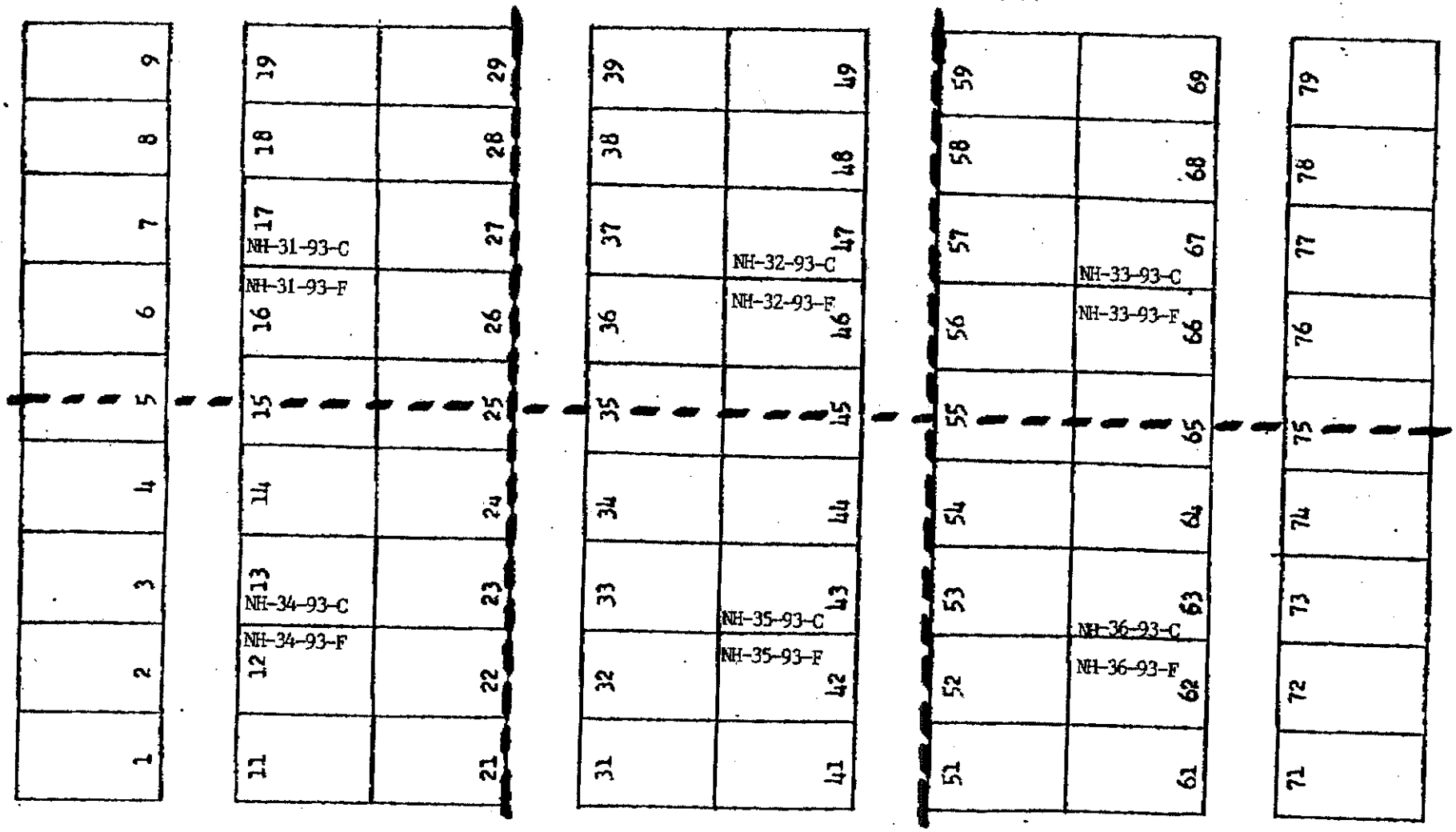
180' X 240'

TYPICAL WAREHOUSE SECTION FLOOR PLAN



GSA-FSS CASAD DEPOT
NEW HAVEN, IND. 46774

Bldg 211

Section 3

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F indicates floor sample

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EACH WAREHOUSE HAS FOUR (4) SECTIONS
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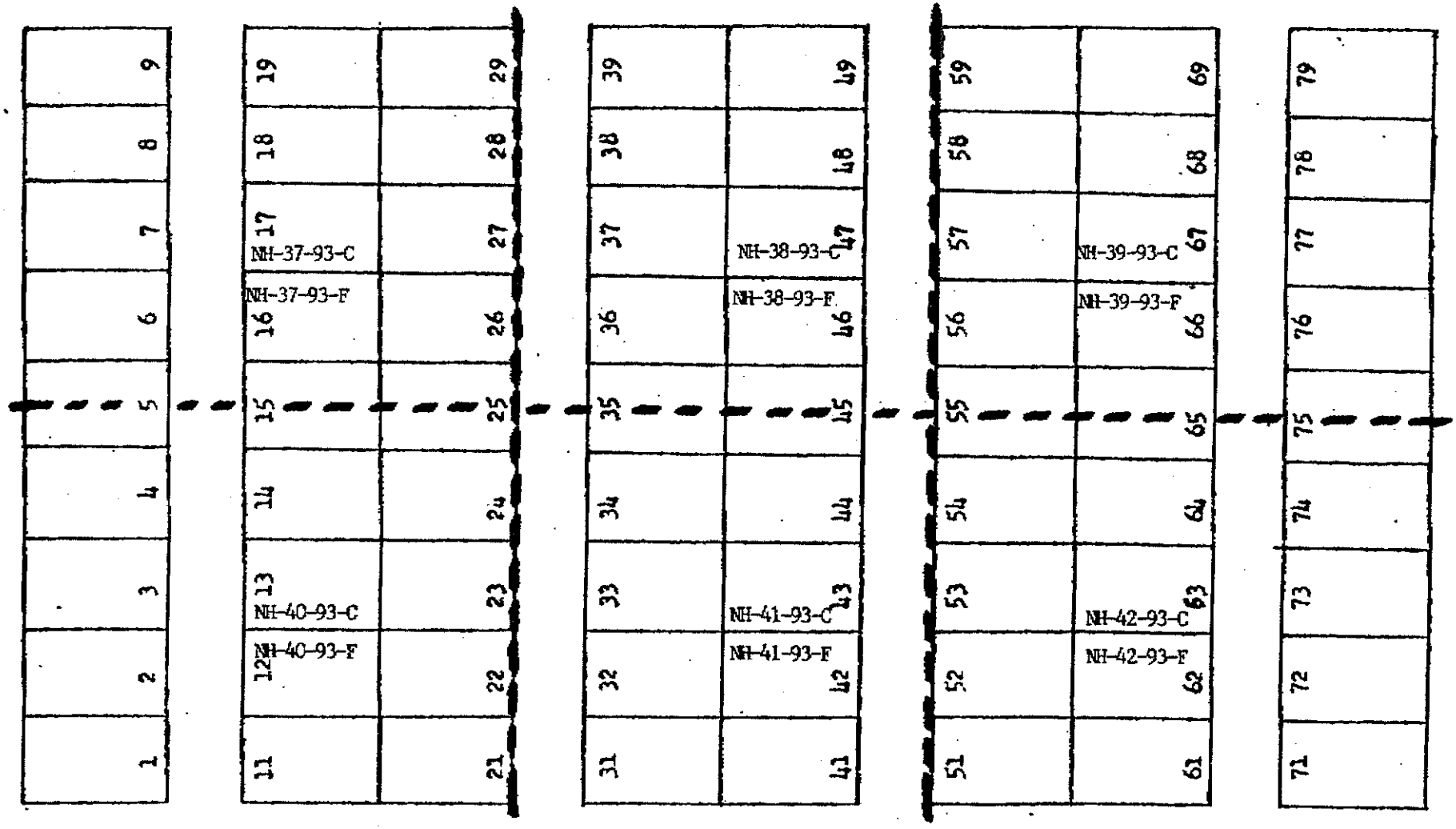


GSA-FSS CASAD DEPOT
NEW HAVEN, IND. 46774

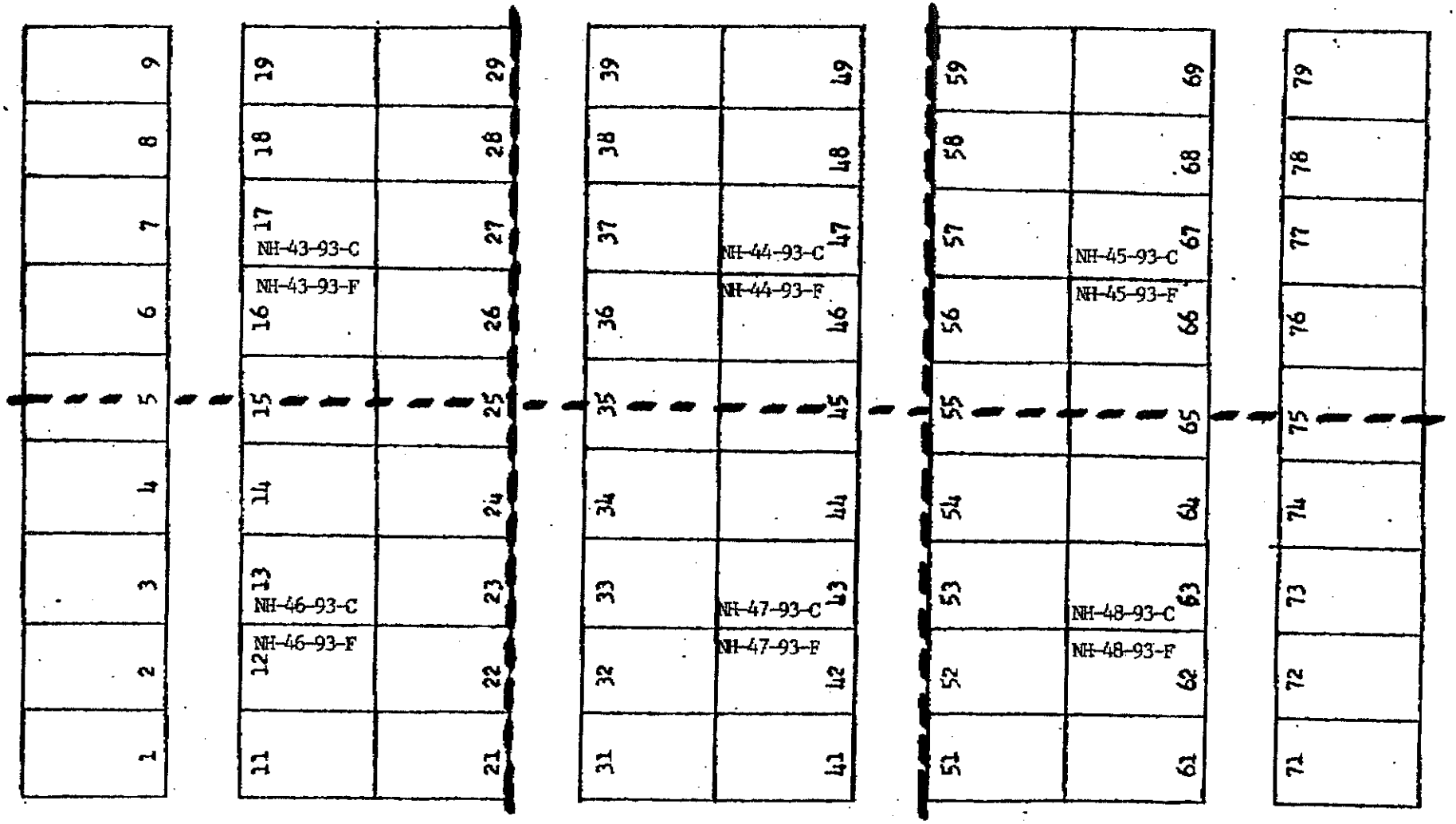
Bldg 211

Section 4

C indicates ceiling sample
F indicates floor sample

THIS IS A TYPICAL WAREHOUSE SECTION
EACH WAREHOUSE HAS FOUR (4) SECTIONS WITH FIREWALLS SEPARATING SECTIONS.
EACH SECTION MEASURES APPROXIMATELY 180' X 240'

TYPICAL WAREHOUSE SECTION FLOOR PLAN



# COMMODITY INSPECTION REPORT

CHECK ☐ SALES ☐ PROCUREMENT

| | |
|---|---|
| CONTRACT NO. n/a | COMMODITY n/a |
| RELEASE OR S/I NO. n/a | LOT NUMBER n/a |
| PROGRAM n/a | INSPECTION REPORT NO. special |
| REGION NO. Hammond Zone | DATE OF INSPECTION 9-11 Feb 93 |

PURCHASER OR CONTRACTOR: n/a

ADDRESS: 3200 Sheffield Ave. Hammond, IN 46327

~~CONSIGNEE~~ OR SUBCONTRACTOR: Clayton Environmental Consultants

ADDRESS: Raritan Center, 160 Fieldcrest Ave Edison, NJ 08837

PERSON CONTACTED (NAME & TITLE): Mr. Fred Brooks, Depot Manager

LOCATION OF MATERIAL INSPECTED: New Haven, IN

## INSPECTION, SAMPLING AND ANALYSIS

| SAMPLES TAKEN (✓) | | ANALYSIS (✓) | |
|---|---|---|---|
| BY CONTRACT SAMPLER/ANALYST | | BY PURCHASER OR CONTRACTOR | |
| BY INSPECTOR | x | BY GOVERNMENT'S ANALYST | x |
| WITNESSED ☐ YES ☐ NO | | WITNESSED ☐ YES ☒ NO | |
| OTHER | | TYPES OF ANALYSES | NO. UNITS |
| | | bulk sample | PER |
| | | 96 each | PER |

| INSPECTION | | IDENTITY OF SAMPLE | |
|---|---|---|---|
| VISUAL | % | FORWARDING DATE | 16 Feb 93 |
| DIMENSIONAL | % | SAMPLE NO. | 1 thru 96 |
| FOR MARKING | % | LOT NO. | n/a |

DESCRIPTION OF PACKAGING (INCLUDE TYPE OF CONVEYANCE)

bulk dust samples from buildings T210 and T211 at New Haven Depot, New Haven, IN to determine amount, if any, of contained asbestos fiber in warehouse dust.

96 bulk dust samples

DISTRIBUTION OF SAMPLES (GIVE COMPLETE ADDRESS)

1. Clayton Environmental Consultants
160 Fieldcrest Ave. Raritan Center
Edison, NJ 08837
2. _____
3. _____

DESCRIBE METHOD OF INSPECTION, SAMPLING AND/OR SAMPLE PREPARATION (USE ATTACHED SHEETS, IF NECESSARY)

see attached sheets.

| ITEM OR LOT NO. | QUANTITY SAMPLED | QUANTITY ACCEPTED OR SOLD | QUANTITY REJECTED | APPROXIMATE VALUE QTY REJECTED | DESCRIPTION OF MATERIAL |
|---|---|---|---|---|---|
| | | | | | |

REASON FOR REJECTION

DISTRIBUTION

☐ Q. A. DIVISION
☐ ORIGINATING DEPOT
☐ FINANCE
☐ Q. A. ZONE BRANCH
☐ STOCKPILE OP. DIVISION
☐ CONTRACTOR
☐ SUPERVISORY Q. A.
☐ CONTRACTING OFFICER
☑ OTHER (SPECIFY) DNSC-O

INSPECTOR (SIGNATURE): Clifford E. Hineman, QAS

DATE: 11 Mar 93

DLAH FORM DEC 88 32

This form supersedes GSA Form 299.

11 Mar 93

SUBJECT: Results of sampling for asbestos at New Haven Depot
( buildings T 211 and T 210 )

On 26 Jan 93 I received information requesting that sampling be performed as required to determine presence and amount of asbestos that may be remaining the above listed warehouses and sections. These two warehouses are to be emptied of all contents and returned to GSA.

Per telecon with Mr. Bretz on 27 Jan, I was informed that a sample plan similar to that used to close out the Marion, Ohio depot in 1986 was desired

A telephone conversation with Mr. Fred Brooks, Depot Manager at New Haven Depot gave the following information:

Warehouses T 211 and T 210 each have 4 sections. Some sections are known to contain or have contained asbestos. Information was inconclusive as to whether or not the other sections have contained asbestos in the past.

Warehouse T 211
Section # 1 - currently empty, has been used for asbestos storage.
# 2 - currently empty, has been used for asbestos storage.
# 3 - currently used for asbestos storage.
# 4 - currently empty, no record of asbestos storage.

Warehouse T 210
Section # 1 - used by other agency, no record of asbestos storage.
# 2 - currently empty, has been used for asbestos storage.
# 3 - currently empty, has been used for asbestos storage.
# 4 - used for storage of tin, tantalum.... no record of asbesto

I traveled to the New Haven Depot on 08 February and gathered samples on 09, 10, and 11 February.

In order to determine the amount of asbestos that remained, if any, in the various sections, bulk sampling of remaining dust was performed and and these samples were analyzed.

In order to determine the level of any possible contamination as well as to determine non-contaminated areas, all eight (8) sections were sampled by bul methods. Each section was divided into six (6) equal areas. Each of these six (6) areas was sampled at ceiling areas and the coresponding area directl underneath at floor level. This required a total of 96 bulk samples (8 sections with 12 samples each).

Each sample was accumulated using a clean small 1 to 2 inch soft bristle bru to gather the sample onto a clean sheet of paper then transfered into a mark self-sealing plastic bag. This was to prevent contaminating the outside of the plastic sample bag. Samples were gathered over 10 to 20 areas within ea sample zone with emphasis on areas where fibers may lodge such as the tops o beams, pipes, and wiring as well as cracks, corners and so on.

The attached warehouse diagrams show the warehouse floor areas and sample areas.

These samples were collected and shipped to Clayton Environmental Consultants, Inc. for analyses to determine asbestos fiber content expressed by percentage. For this type of analyses, results less than 1% are reported less than 1% and not by percentage points.

Results of sampling indicate that warehouse T211 has no asbestos fiber problems. Warehouse T210 has levels above 1% in six areas.

Warehouse T211 - no levels above 1%.

Warehouse T210 - section 1 sample NH-2-93-C 3%
sample NH-2-93-F 3%
sample NH-3-93-F 2%

section 2 no levels above 1%

section 3 sample NH-15-93-C 2%
sample NH-15-93-F 3%
sample NH-18-93-F 10%

section 4 no levels above 1%

ASBESTOS SAMPLE CHECK LIST
NEW HAVEN DEPOT
FEBRUARY 1993

WAREHOUSE 210
SECTION 1

| | | |
|---|---|---|
| 1 | NH-1-93-C | <1% |
| 2 | NH-1-93-F | <1% |
| 3 | NH-2-93-C | 3% |
| 4 | NH-2-93-F | 3% |
| 5 | NH-3-93-C | <1% |
| 6 | NH-3-93-F | 2% |
| 7 | NH-4-93-C | <1% |
| 8 | NH-4-93-F | <1% |
| 9 | NH-5-93-C | <1% |
| 10 | NH-5-93-F | <1% |
| 11 | NH-6-93-C | <1% |
| 12 | NH-6-93-F | <1% |

Warehouse 210
Section 2

| | | |
|---|---|---|
| 13 | NH-7-93-C | <1% |
| 14 | NH-7-93-F | <1% |
| 15 | NH-8-93-C | <1% |
| 16 | NH-8-93-F | <1% |
| 17 | NH-9-93-C | <1% |
| 18 | NH-9-93-F | <1% |
| 19 | NH-10-93-C | <1% |
| 20 | NH-10-93-F | <1% |
| 21 | NH-11-93-C | <1% |
| 22 | NH-11-93-F | NAD |
| 23 | NH-12-93-C | <1% |
| 24 | NH-12-93-F | <1% |

Warehouse 210
Section 3

| | | |
|---|---|---|
| 25 | NH-13-93-C | <1% |
| 26 | NH-13-93-F | NAD |
| 27 | NH-14-93-C | NAD |
| 28 | NH-14-93-F | NAD |
| 29 | NH-15-93-C | 2% |
| 30 | NH-15-93-F | 3% |
| 31 | NH-16-93-C | <1% |
| 32 | NH-16-93-F | NAD |
| 33 | NH-17-93-C | NAD |
| 34 | NH-17-93-F | <1% |
| 35 | NH-18-93-C | <1% |
| 36 | NH-18-93-F | 10% |

NAD means NO ASBESTOS DETECTED.

Warehouse 210
Section 4

| | | |
|---|---|---|
| 37 | NH-19-93-C | <1% |
| 38 | NH-19-93-F | <1% |
| 39 | NH-20-93-C | <1% |
| 40 | NH-20-93-F | NAD |
| 41 | NH-21-93-C | <1% |
| 42 | NH-21-93-F | NAD |
| 43 | NH-22-93-C | NAD |
| 44 | NH-22-93-F | NAD |
| 45 | NH-23-93-C | <1% |
| 46 | NH-23-93-F | NAD |
| 47 | NH-24-93-C | <1% |
| 48 | NH-24-93-F | <1% |

Warehouse 211
Section 1

| | | |
|---|---|---|
| 49 | NH-25-93-C | NAD |
| 50 | NH-25-93-F | NAD |
| 51 | NH-26-93-C | NAD |
| 52 | NH-26-93-F | NAD |
| 53 | NH-27-93-C | NAD |
| 54 | NH-27-93-F | NAD |
| 55 | NH-28-93-C | NAD |
| 56 | NH-28-93-F | NAD |
| 57 | NH-29-93-C | NAD |
| 58 | NH-29-93-F | NAD |
| 59 | NH-30-93-C | NAD |
| 60 | NH-30-93-F | NAD |

Warehouse 211
Section 2

| | | |
|---|---|---|
| 61 | NH-31-93-C | NAD |
| 62 | NH-31-93-F | NAD |
| 63 | NH-32-93-C | NAD |
| 64 | NH-32-93-F | NAD |
| 65 | NH-33-93-C | NAD |
| 66 | NH-33-93-F | NAD |
| 67 | NH-34-93-C | NAD |
| 68 | NH-34-93-F | <1% |
| 69 | NH-35-93-C | NAD |
| 70 | NH-35-93-F | NAD |
| 71 | NH-36-93-C | NAD |
| 72 | NH-36-93-F | NAD |

Warehouse 211
Section 3

| | | |
|---|---|---|
| 73 | NH-37-93-C | NAD |
| 74 | NH-37-93-F | NAD |
| 75 | NH-38-93-C | NAD |

NAD means NO ASBESTOS DETECTED.

| | | |
|---|---|---|
| 76 | NH-38-93-F | NAD |
| 77 | NH-39-93-C | NAD |
| 78 | NH-39-93-F | NAD |
| 79 | NH-40-93-C | NAD |
| 80 | NH-40-93-F | NAD |
| 81 | NH-41-93-C | NAD |
| 82 | NH-41-93-F | NAD |
| 83 | NH-42-93-C | <1% |
| 84 | NH-42-93-F | <1% |

Warehouse 211
Section 4

| | | |
|---|---|---|
| 85 | NH-43-93-C | NAD |
| 86 | NH-43-93-F | NAD |
| 87 | NH-44-93-C | NAD |
| 88 | NH-44-93-F | NAD |
| 89 | NH-45-93-C | NAD |
| 90 | NH-45-93-F | NAD |
| 91 | NH-46-93-C | NAD |
| 92 | NH-46-93-F | NAD |
| 93 | NH-47-93-C | NAD |
| 94 | NH-47-93-F | NAD |
| 95 | NH-48-93-C | NAD |
| 96 | NH-48-93-F | NAD |

NAD means NO ASBESTOS DETECTED.

Section 1

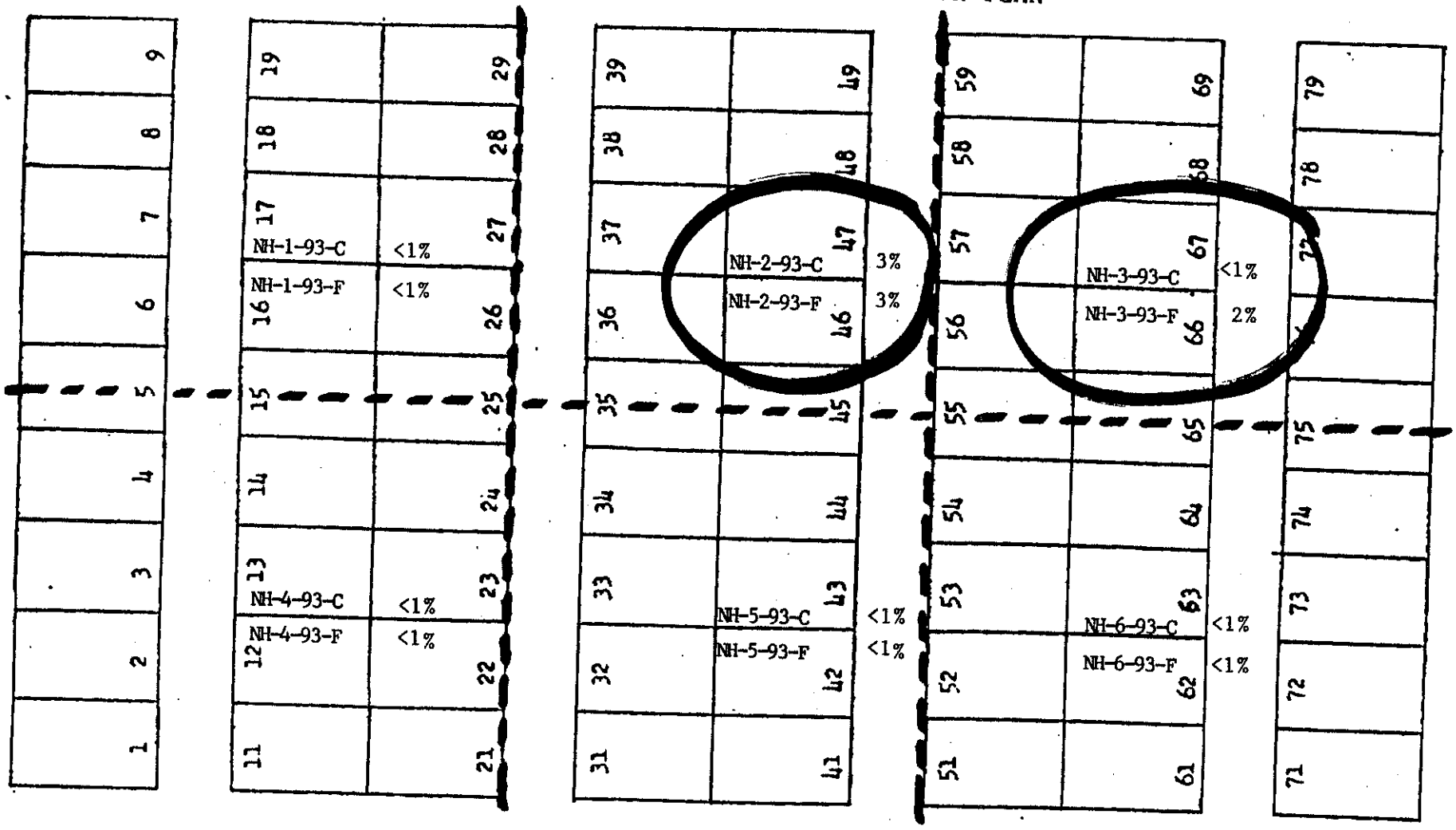
C indicates ceiling sample
F indicates floor sample

TYPICAL WAREHOUSE SECTION

EACH WAREHOUSE HAS FOUR (4) SECTIONS WITH FIREWALLS SEPARATING SECTIONS. EACH SECTION MEASURES APPROXIMATELY 180' X 240'

NAD means NO ASBESTOS DETECTED.

TYPICAL WAREHOUSE SECTION FLOOR PLAN



NEW HAVEN, IND. 46774

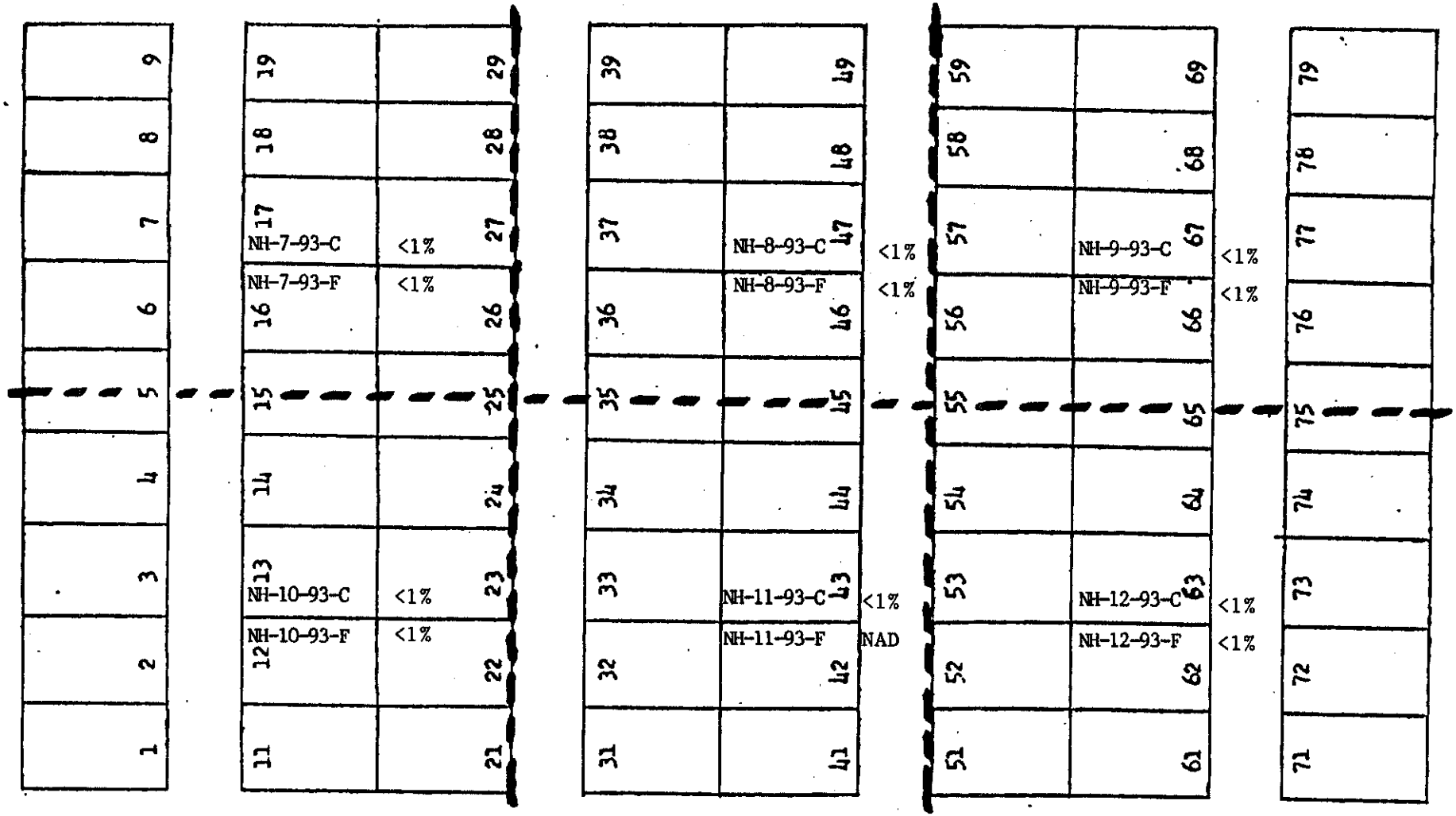
Section 2

C indicates ceiling sample
F indicates floor sample

THIS IS A TYPICAL WAREHOUSE SECTION
EACH WAREHOUSE HAS FOUR (4) SECTIONS WITH FIREWALLS SEPARATING SECTIONS. EACH SECTION MEASURES APPROXIMATELY 180' X 240'

NAD means NO ASBESTOS DETECTED.

TYPICAL WAREHOUSE SECTION FLOOR PLAN



NEW HAVEN, IND. 46774

Bldg 210

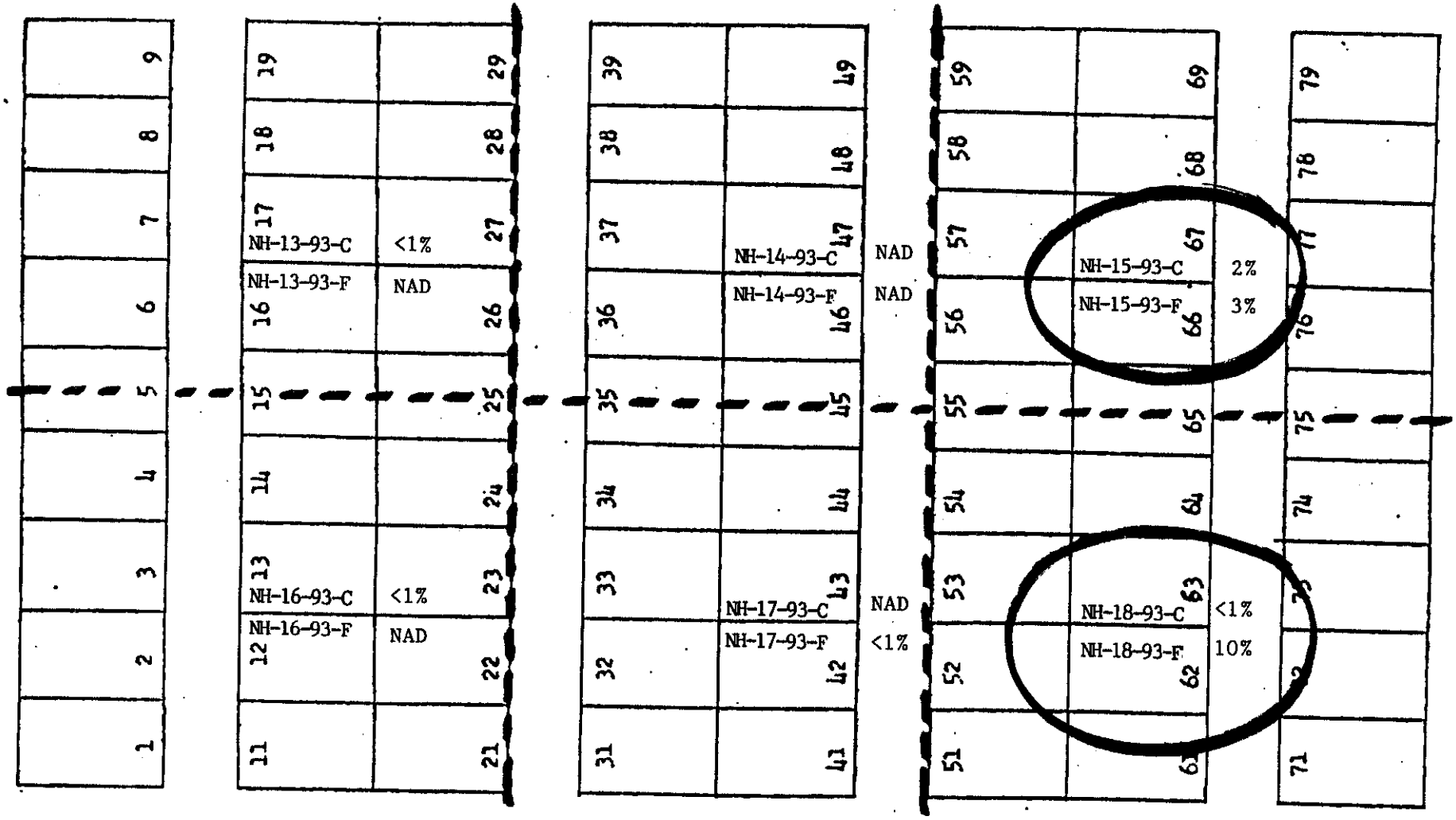
Section 3

C indicates ceiling sample
F indicates floor sample

THIS IS A TYPICAL WAREHOUSE SECTION
EACH WAREHOUSE HAS FOUR (4) SECTIONS
WITH FIREWALLS SEPARATING SECTIONS.
EACH SECTION MEASURES APPROXIMATELY
180' X 240'

NAD means NO ASBESTOS DETECTED.

## TYPICAL WAREHOUSE SECTION FLOOR PLAN



NEW HAVEN, IND. 46774

Section 4

C indicates ceiling sample
F indicates floor sample

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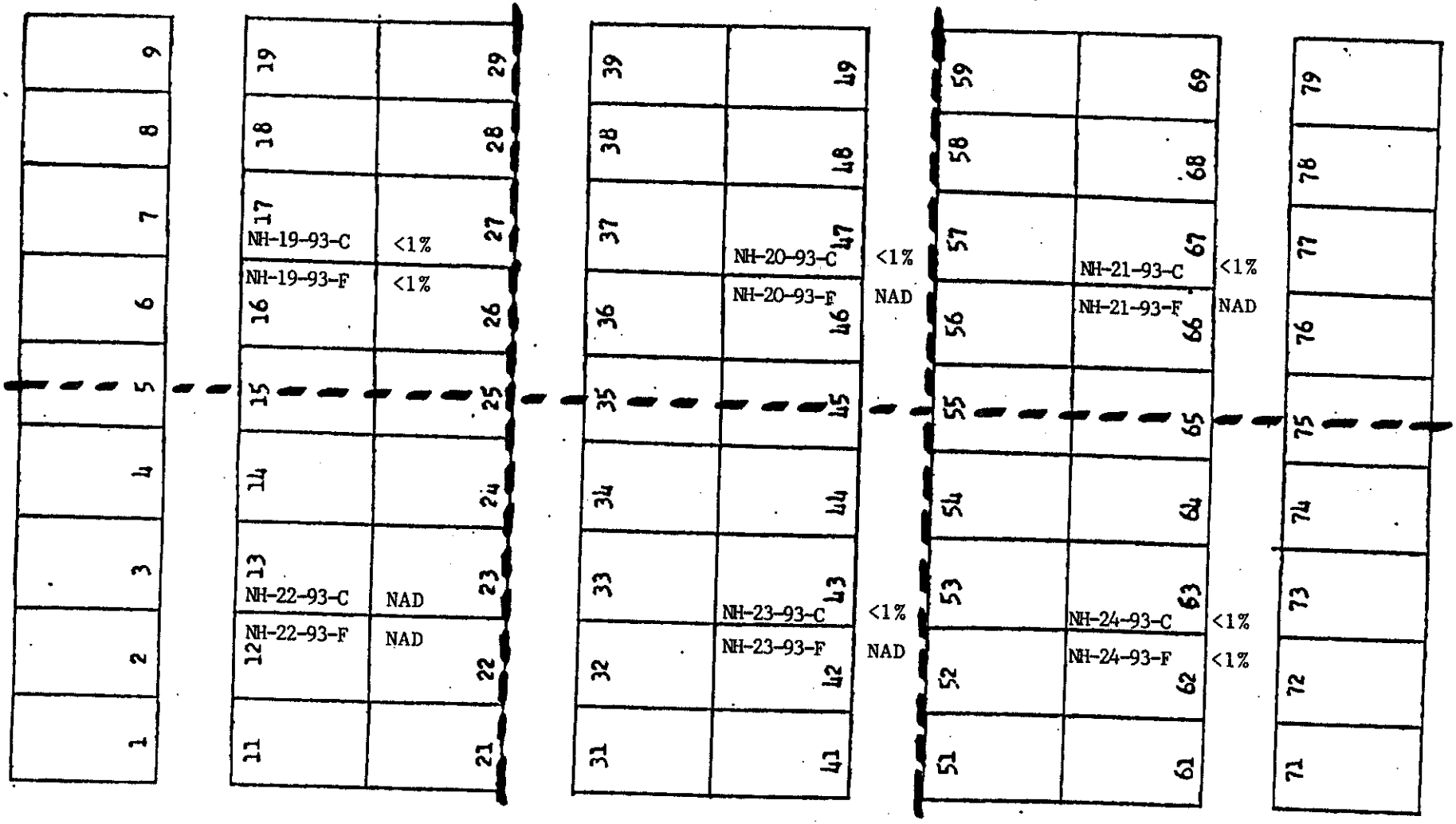
EACH WAREHOUSE HAS FOUR (4) SECTIONS
WITH FIREWALLS SEPARATING SECTIONS.
EACH SECTION MEASURES APPROXIMATELY
180' X 240'

NAD means NO ASBESTOS DETECTED.

TYPICAL WAREHOUSE SECTION FLOOR PLAN



NEW HAVEN, IND. 46774

Bldg 211

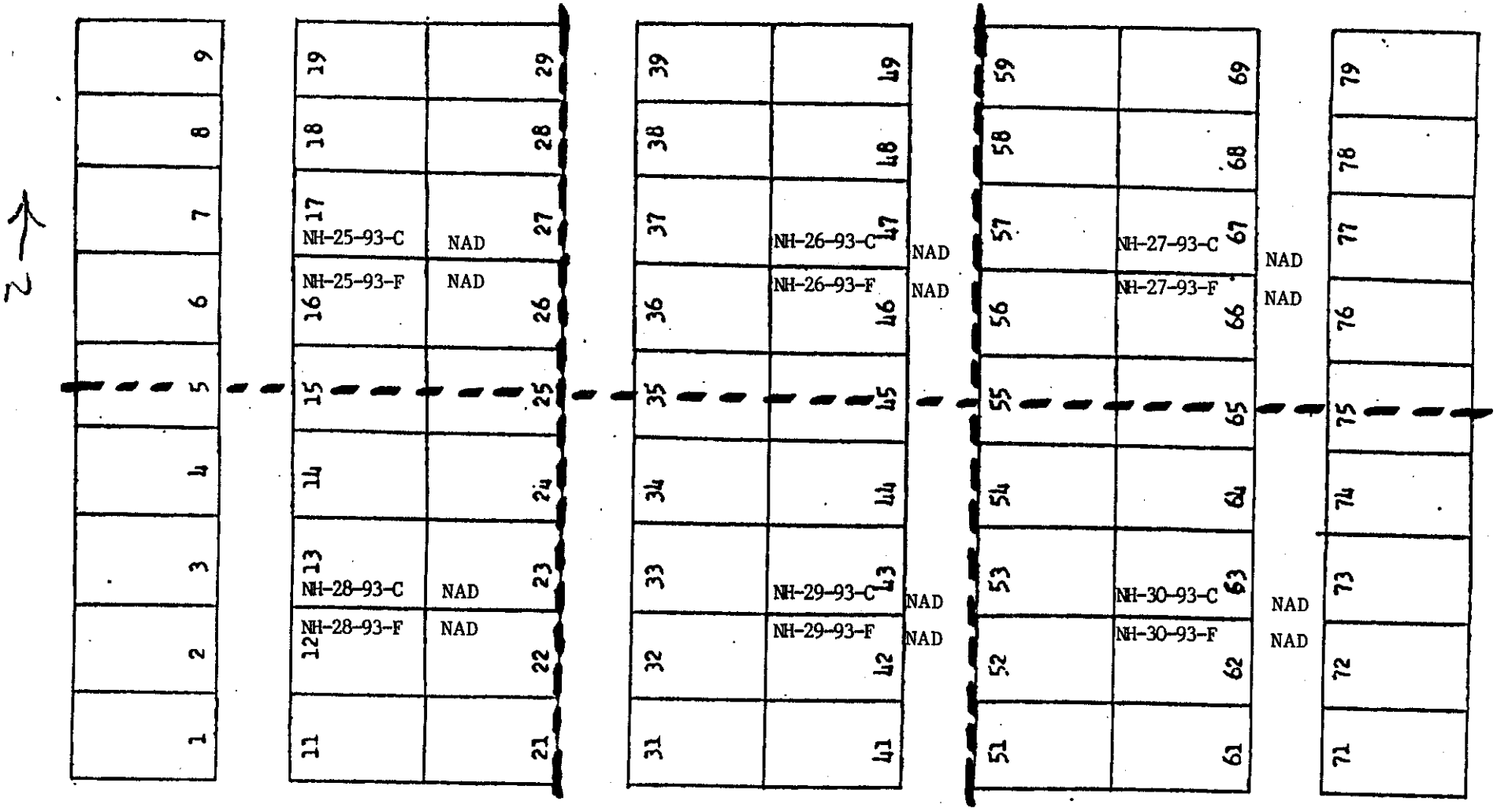
Section 1

C indicates ceiling sample
F indicates floor sample

THIS IS A TYPICAL WAREHOUSE SECTION
EACH WAREHOUSE HAS FOUR (4) SECTIONS
WITH FIREWALLS SEPARATING SECTIONS.
EACH SECTION MEASURES APPROXIMATELY
180' X 240'

NAD means NO ASBESTOS DETECTED.

TYPICAL WAREHOUSE SECTION FLOOR PLAN



USA-FSS GSAS BLDG
NEW HAVEN, IND. 46774

Bldg 211

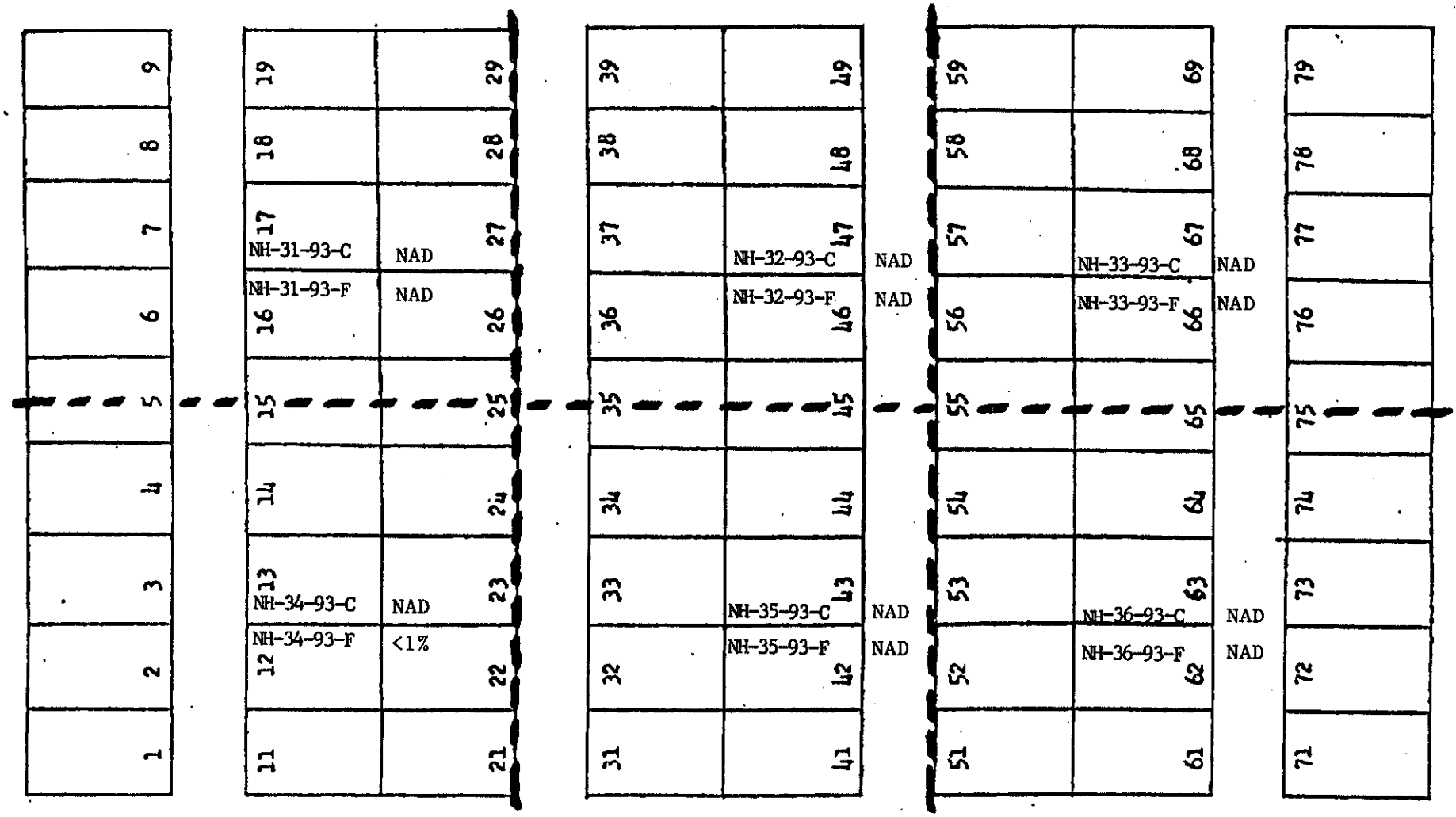
Section 2

C indicates ceiling sample
F indicates floor sample

THIS IS A TYPICAL WAREHOUSE SECTION.
EACH WAREHOUSE HAS FOUR (4) SECTIONS WITH FIREWALLS SEPARATING SECTIONS.
EACH SECTION MEASURES APPROXIMATELY 180' X 240'

NAD means NO ASBESTOS DETECTED.

TYPICAL WAREHOUSE SECTION FLOOR PLAN



NEW HAVEN, IND. 46774

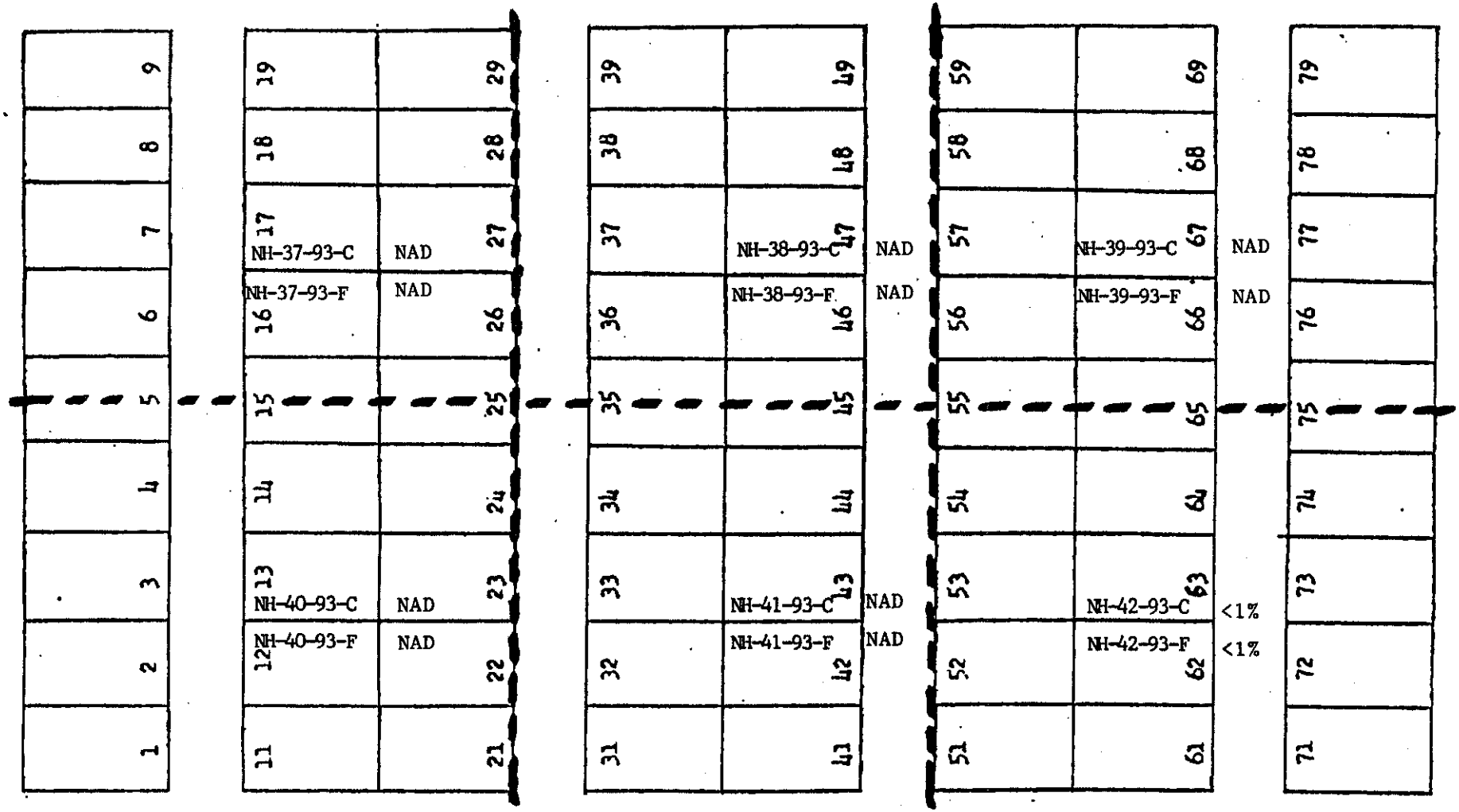
Section 3

C indicates ceiling sample
F indicates floor sample

EACH WAREHOUSE HAS FOUR (4) SECTIONS WITH FIREWALLS SEPARATING SECTIONS. EACH SECTION MEASURES APPROXIMATELY 180' X 240'

NAD means NO ASBESTOS DETECTED.

TYPICAL WAREHOUSE SECTION FLOOR PLAN



New Haven, IND. 46774

Section 4

C indicates ceiling sample
F indicates floor sample

THIS IS A TYPICAL WAREHOUSE SECTION
EACH WAREHOUSE HAS FOUR (4) SECTIONS WITH FIREWALLS SEPARATING SECTIONS.
EACH SECTION MEASURES APPROXIMATELY 180' X 240'

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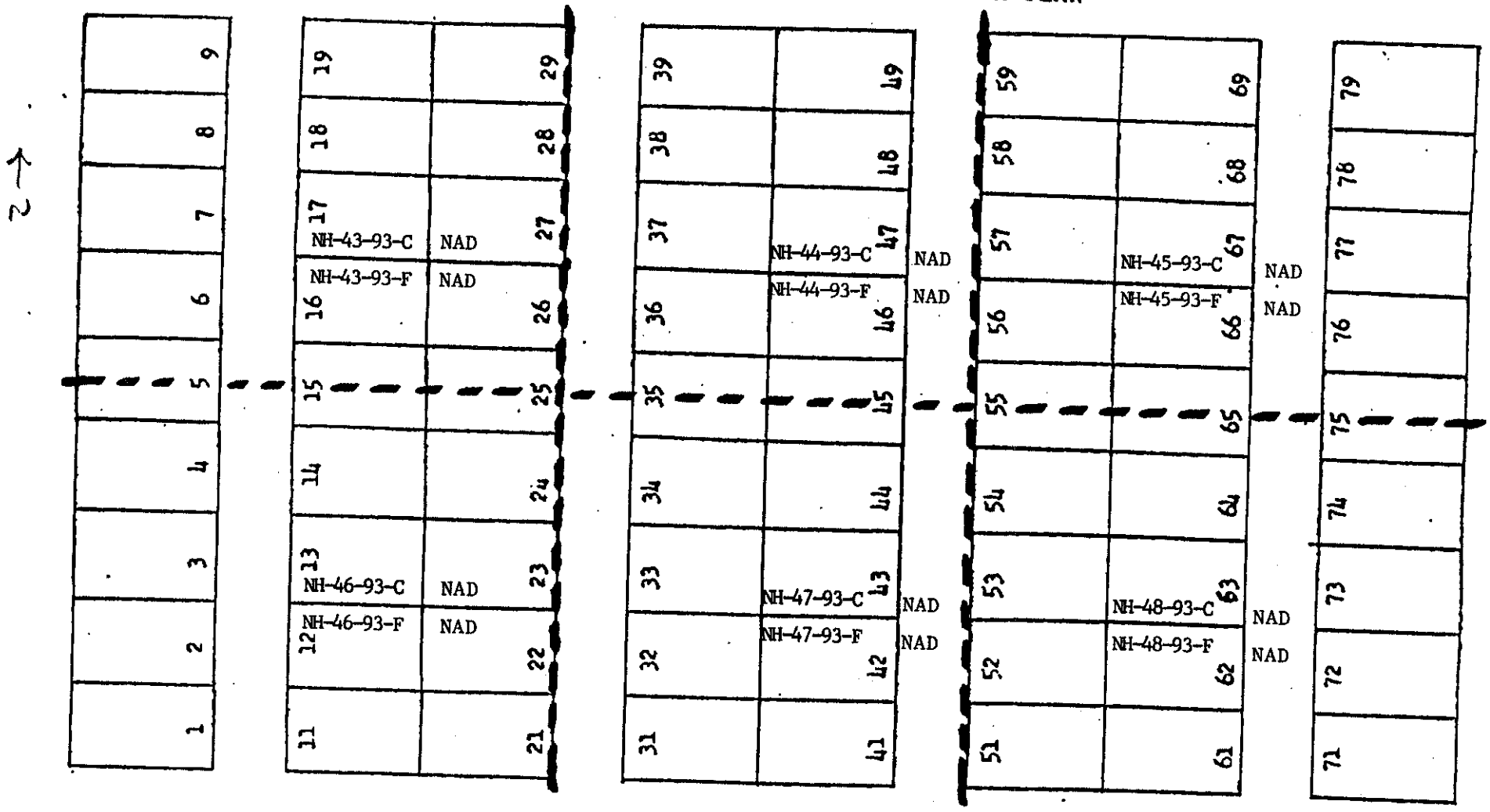
TYPICAL WAREHOUSE SECTION FLOOR PLAN



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# ANALYTICAL METHOD FOR ASBESTOS IN BULK SAMPLES USING POLARIZED LIGHT MICROSCOPY (PLM)

A representative portion of the bulk sample is transferred to a small dish. The sample is examined under a stereo-microscope at 10 to 40 X magnification to determine if the material is fibrous and to note the physical characteristics of the sample. If fibers are present, fiber morphology is noted.

Forceps are used to extract fibers from the sample. At least one fiber representative of each type observed in the sample under the stereomicroscope is extracted and mounted on a microscope slide using a refractive index liquid (Cargille Series E: HD [high dispersion]).

After mounting, the fibers are analyzed and identified using polarized light microscopy (PLM) supplemented by dispersion staining. After fiber identification using PLM, a visual estimate is made of the percent composition by type of asbestos present and by type of other fibrous materials identified. The visual estimate is based on volume and is accomplished using stereomicroscopic examination of the bulk sample.

## References

McCrone, Walter C. 1980. *The Asbestos Particle Atlas.* Ann Arbor, MI: Ann Arbor Science Publishers, Inc.

United States Environmental Protection Agency. Environmental Monitoring Systems Laboratory. 1982. *Interim Method for the Determination of Asbestos in Bulk Insulation Samples.* EPA-600/M4-82-020. Washington: GPO, December.

# CLAYTON ENVIRONMENTAL CONSULTANTS, INC.

## LAB REPORT NO. E93C005

## APPLICABLE ANALYSIS FOOTNOTES

- [x] Limit of Detection: <1%
  Limit of Quantitation: 1%

- [x] NOTE: The reliable limit of quantitation of the method is 1%, although asbestos may be qualitatively detected at concentrations less than 1%. Samples for which asbestos is detected at <1% are reported as "trace, <1%". No asbestos detected (NAD) indicates that no fibers were observed.

- [x] United States Environmental Protection Agency. Environmental Monitoring Systems Laboratory. 1982. *Interim Method for the Determination of Asbestos in Bulk Insulation Samples*. EPA-600/M4-82-020. Washington: GPO, December

- [x] Percentages are visual estimates based on volume.

- [ ] Analysis of floor tile and other resinuously bound materials using EPA-600/M4-82-020, December 1982 may yield false negative results because of method limitations in separating closely bound fibers and in detecting fibers of small length and diameter. When analysis of such materials by the EPA method yields results negative for the presence of asbestos, Clayton recommends utilizing alternative methods of identification, including transmission electron microscopy. For more information, contact the laboratory.

- [ ] Fibers were found which were positively identified as asbestos but did not meet the 3:1 length to width fiber classification as defined in EPA-600/M4-82-020, December 1982.

**Northeastern Operations**

Raritan Center
160 Fieldcrest Avenue
Edison, NJ 08837
(908) 225-6040
Fax (908) 225-4577

**Clayton**
ENVIRONMENTAL
CONSULTANTS

March 3, 1993

Mr. Cliff Hineman, QAS
DLA/DNSZ
HMQD WARREN DEPOT
Pine Street Extension
Warren, Ohio 44482-9999

FINAL REPORT
Clayton Project No. 46692.00
Batch No. B021707290
P.O. No. DLA302-93-M-0078

Dear Mr. Hineman:

The attached table presents the results of our polarized light microscopy analysis of 96 bulk samples we received on February 17, 1993.

Please note that any unused portion of the samples will be disposed in 30 days unless otherwise requested.

It is a pleasure to provide our services to you. If you have any questions, please call.

Sincerely,

Odette Mina
Supervisor, Laboratory Services
Northeastern Operations

OM/ge

Attachments (32)

**Results of Analysis of Bulk Samples for Asbestos Content for DLA/DNSZ**

**Clayton Project No. 46692.00**
**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180511 | #1 NH-1-93-C | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 5 Insect<br>20 Cellulose<br>5 Plant | binder/filler mastic |
| | Layer 2 | homogeneous offwhite compressed mineral mixture | No Asbestos Detected (NAD) | | quartz |
| | Layer 3 | inhomogeneous gray compressed cellulose wood | trace, <1 Chrysotile | 80 Cellulose<br>10 Insect | -- |
| | Layer 4 | inhomogeneous gray fibers | 2 Amosite | 10 Plant<br>50 Cellulose<br>3 Insect<br>5 Feathers | -- |
| | Total | | trace, <1 | | |

**Results of Analysis of Bulk Samples for Asbestos Content for DLA/DNSZ**

**Clayton Project No. 46692.00**
**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180512 | #2 NH-1-93-F Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 10 Cellulose<br>2 Plant<br>1 Hair | binder/filler, quartz, mastic |
| | Layer 2 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | mastic |
| | Layer 3 | inhomogeneous gray fibers | 2 Amsoite | 4 Insect<br>40 Cellulose<br>10 Plant<br>1 Hair<br>5 Feathers | binder/filler, mastic |
| | Layer 4 | inhomogeneous gray fibers compressed into sheets | NAD | 2 Plant<br>90 Cellulose | -- |
| | Total | | trace, <1 | | |
| 180513 | #3NH-2-93-C | inhomogeneous gray fiber and mineral mixture | 3 Amosite | 10 Cellulose<br>2 Mineral Wool<br>5 Plant<br>1 Hair | binder/filler, mastic |
| 180514 | #4NH-2-93-F Layer 1 | inhomogeneous gray fiber and mineral mixture | 2 Amosite | 15 Cellulose<br>1 Mineral Wool<br>2 Plant | binder/filler, quartz, perlite, iron fillings |

**Results of Analysis of Bulk Samples for Asbestos Content for DLA/DNSZ**

**Clayton Project No. 46692.00**
**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180514 | #4NH-2-93-F | | | | |
| | Layer 2 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Layer 3 | inhomogeneous offwhite compressed fiber and filler mixture | trace, <1 Amosite | 5 Cellulose<br>1 Plant<br>2 Hair | perlite |
| | Layer 4 | inhomogeneous gray fibers | 25 Chrysotile<br>4 Amosite | 10 Cellulose<br>2 Hair<br>3 Plant<br>5 Synthetic Fibers<br>4 Feathers<br>4 Insect | perlite, binder/filler |
| | Layer 5 | inhomogeneous gray fibers compressed into sheets | NAD | 75 Cellulose | binder/filler, mastic |
| | Total | | 3 | | |
| 180515 | #5NH-3-93-C | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 5 Cellulose<br>1 Mineral Wool<br>3 Plant | binder/filler |
| 180516 | #6NH-3-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | 2 Amosite | 1 Mineral Wool<br>2 Synthetic Fibers<br>3 Feathers<br>10 Cellulose<br>5 Plant<br>5 Insect | binder/filler, quartz, mastic |

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**Results of Analysis of Bulk Samples for Asbestos Content for DLA/DNSZ**

**Clayton Project No. 46692.00**
**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180516 | #6NH-3-93-F Layer 2 | inhomogeneous gray fibers | trace, <1 Chrysotile<br>trace <1 Amosite | 40 Cellulose<br>2 Hair<br>10 Plant<br>10 Insect<br>2 Synthetic Fibers<br>5 Feathers | perlite, binder/filler |
| | Layer 3 | inhomogeneous gray compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | 2 | | |
| 180517 | #7NH-4-93-C Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 15 Cellulose<br>1 Mineral Wool<br>2 Insect<br>3 Feathers<br>1 Synthetic Fiber<br>15 Plant | binder/filler, mastic, quartz |
| | Layer 2 | inhomogeneous gray compressed mineral mixture | NAD | -- | calcite |
| | Layer 3 | inhomogeneous offwhite compressed cellulose wood | NAD | 85 Cellulose | -- |

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**Results of Analysis of Bulk Samples for Asbestos Content for DLA/DNSZ**

**Clayton Project No. 46692.00**
**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180517 | #7NH-4-93-C Layer 4 | inhomogeneous gray fibers | trace, <1 Chrysotile | 15 Feathers<br>15 Plant<br>15 Cellulose<br>10 Insect | -- |
| | Total | | trace, <1 | | |
| 180518 | #8NH-4-93-F Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 2 Synthetic Fibers<br>5 Insect<br>5 Mineral Wool<br>5 Plant<br>2 Hair<br>15 Cellulose | perlite, binder/filler, quartz, mastic |
| | Layer 2 | homogeneous brown compressed mineral mixture | NAD | -- | quartz |
| | Layer 3 | inhomogeneous gray fibers | 4 Amosite | 25 Cellulose<br>1 Hair<br>15 Plant<br>2 Mineral Wool<br>1 Synthetic Fiber<br>15 Insect | perlite |
| | Layer 4 | inhomogeneous offwhite compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | trace, <1 | | |

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**Results of Analysis of Bulk Samples for Asbestos Content for DLA/DNSZ**

**Clayton Project No. 46692.00**
**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180519 | #9NH-5-93-C | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 10 Cellulose<br>3 Mineral Wool<br>10 Plant<br>3 Insect<br>1 Hair | binder/filler, quartz |
| 180520 | #10NH-5-93-F<br>Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 15 Cellulose<br>15 Plant<br>3 Insect | quartz, mastic, perlite |
| | Layer 2 | inhomogeneous offwhite compressed mineral mixture | NAD | -- | calcite, quartz |
| | Layer 3 | inhomogeneous gray fibers | 2 Amosite | 5 Insect<br>35 Cellulose<br>5 Hair<br>5 Feathers<br>10 Plant | -- |
| | Layer 4 | inhomogeneous tan compressed cellulose wood | NAD | 2 Plant<br>90 Cellulose | -- |
| | Total | | trace, <1 | | |
| 180521 | #11NH-6-93-C<br>Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 15 Plant<br>15 Cellulose<br>1 Mineral Wool | binder/filler |

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**Results of Analysis of Bulk Samples for Asbestos Content for DLA/DNSZ**

**Clayton Project No. 46692.00**
**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180521 | #11NH-6-93-C Layer 2 | homogeneous black fibers | NAD | 95 Synthetic Fibers | -- |
| | Total | | trace, <1 | | |
| 180522 | #12NH-6-93-F Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 1 Hair<br>10 Cellulose<br>1 Insect<br>2 Feathers | binder/filler, quartz |
| | Layer 2 | inhomogeneous gray fibers | trace, <1 Chrysotile<br>2 Amosite | 20 Cellulose<br>1 Synthetic Fiber<br>2 Hair<br>1 Mineral Wool<br>10 Feathers<br>20 Plant | binder/filler |
| | Layer 3 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | trace, <1 | | |
| 180523 | #13NH-7-93-C | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 1 Insect<br>10 Cellulose<br>3 Plant | binder/filler, quartz, mastic, paint |

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**Samples for Asbestos Content**
**for**
**DLA/DNSZ**
**Clayton Project No. 46692.00**
**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180524 | #14NH-7-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 45 Cellulose<br>1 Synthetic Fiber<br>5 Insect<br>10 Plant<br>3 Hair | binder/filler, calcite, quartz, mastic |
| | Layer 2 | inhomogeneous gray fibers | 5 Chrysotile<br>trace, <1 Amosite | 40 Cellulose<br>3 Synthetic Fibers<br>15 Plant<br>1 Insect<br>5 Hair | binder/filler |
| | Layer 3 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | trace, <1 | | |
| 180525 | #15 NH-8-93-C | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | <1 Amosite | 2 Plant<br>10 Cellulose | binder/filler, quartz paint, mastic |
| | Layer 2 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | trace, <1 | | |
| 180526 | #16 NH-8-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 20 Cellulose<br>3 Insect<br>5 Plant | binder/filler, calcite, mastic |

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**Samples for Asbestos Content**
**for**
**DLA/DNSZ**

**Clayton Project No. 46692.00**
**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180526 | #16 NH-8-93-F | | | | |
| | Layer 2 | inhomogeneous gray fibers | trace, <1 Amosite | 40 Cellulose<br>2 Insect<br>20 Plant | mastic |
| | Layer 3 | inhomogeneous gray compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | trace, <1 | | |
| 180527 | #17 NH-9-93-C | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 25 Cellulose<br>5 Plant | binder/filler, quartz paint, mastic |
| | Layer 2 | inhomogeneous gray compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Layer 3 | inhomogeneous gray fibers | trace, <1 Amosite | 50 Cellulose<br>10 Plant | binder/filler |
| | Total | | trace, <1 | | |
| 180528 | #18 NH-9-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 1 Feathers<br>3 Cellulose<br>1 Mineral Wool<br>3 Insect | binder/filler quartz |
| | Layer 2 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |

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**Samples for Asbestos Content**
**for**
**DLA/DNSZ**

**Clayton Project No. 46692.00**
**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180528 | #18 NH-9-93-F | | | | |
| | Layer 3 | inhomogeneous gray fibers | NAD | 40 Cellulose<br>3 Hair<br>40 Plant<br>10 Feathers<br>5 Insect | filler |
| | Layer 4 | inhomogeneous gray compressed fiber and mineral mixture | NAD | 1 Hair<br>25 Cellulose | binder/filler, quartz |
| | Layer 5 | inhomogeneous offwhite compressed fiber and mineral mixture | NAD | -- | filler |
| | Total | | trace, <1 | | |
| 180529 | #19 NH-10-93-C | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 15 Cellulose<br>3 Plant | binder/filler mastic |
| | Layer 2 | inhomogeneous gray compressed mastic | NAD | -- | mastic |
| | Layer 3 | inhomogeneous gray compressed fibers | NAD | 3 Plant<br>90 Cellulose | -- |
| | Total | | trace, <1 | | |
| 180530 | #20 NH-10-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 10 Cellulose<br>5 Insect<br>1 Hair | binder/filler, quartz, mastic |

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**Samples for Asbestos Content**
**for**
**DLA/DNSZ**

**Clayton Project No. 46692.00**
**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180530 | #20 NH-10-93-F Layer 2 | inhomogeneous tan compressed cellulose wood | NAD | 90 Cellulose | mastic |
| | Total | | trace, <1 | | |
| 180531 | #21 NH-11-93-C | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 15 Cellulose<br>3 Plant | binder/filler<br>quartz |
| 180532 | #22 NH-11-93-F Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 10 Cellulose<br>2 Plant<br>2 Hair<br>2 Isect | binder/filler<br>quartz |
| | Layer 2 | inhomogeneous gray fibers | NAD | 35 Cellulose<br>3 Hair<br>3 Plant<br>10 Insect<br>5 Feathers | mastic |
| | Layer 3 | inhomogeneous gray compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Layer 4 | homogeneous offwhite compressed mineral mixture | NAD | -- | quartz |
| | Total | | NAD | | |

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**Results of Analysis of Bulk Samples for Asbestos Content for DLA/DNSZ**

**Clayton Project No. 46692.00**
**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180533 | #23 NH-12-93-C | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 35 Cellulose<br>2 Insect<br>5 Plant | binder/filler, quartz, paint |
| | Layer 2 | inhomogeneous white compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | trace, <1 | | |
| 180534 | #24 NH-12-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 20 Cellulose<br>2 Hair<br>1 Insect<br>5 Plant | binder/filler, quartz |
| | Layer 2 | inhomogeneous tan compressed cellulose wood | NAD | 2 Plant<br>95 Cellulose | -- |
| | Layer 3 | inhomogeneous gray compressed mineral mixure | NAD | -- | binder/filler, calcite mastic |
| | Layer 4 | inhomogeneous gray fibers | NAD | 50 Cellulose<br>5 Insect<br>2 Hair<br>10 Plant | mastic |
| | Total | | trace, <1 | | |

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**Results of Analysis of Bulk Samples for Asbestos Content for DLA/DNSZ**

**Clayton Project No. 46692.00**
**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180535 | #25 NH-13-93-C | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 25 Cellulose<br>10 Plant<br>10 Mineral Wool<br>1 Insect | binder/filler, quartz mastic |
| | Layer 2 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Layer 3 | inhomogeneous gray fibers | NAD | 30 Cellulose<br>2 Hair<br>2 Insect<br>5 Mineral Wool<br>15 Plant | mastic |
| | Total | | trace, <1 | | |
| 180536 | #26NH-13-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 15 Cellulose<br>2 Insect<br>5 Plant | quartz |
| | Layer 2 | inhomogeneous offwhite compressed mineral mixture | NAD | -- | quartz |
| | Layer 3 | inhomogeneous gray compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | NAD | | |

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**Results of Analysis of Bulk Samples for Asbestos Content for DLA/DNSZ**

**Clayton Project No. 46692.00**
**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180537 | #27NH-14-93-C Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 15 Cellulose<br>1 Synthetic Fiber<br>20 Plant<br>3 Insect | binder/filler, mastic, quartz |
| | Layer 2 | inhomogeneous gray compressed mastic | NAD | -- | mastic |
| | Total | | NAD | | |
| 180538 | #28NH-14-93-F Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 10 Cellulose<br>1 Plant<br>1 Insect | binder/filler, mastic |
| | Layer 2 | inhomogeneous gray compressed mineral mixture | NAD | -- | calcite |
| | Layer 3 | inhomogeneous gray compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | NAD | | |
| 180539 | #29NH-15-93-C Layer 1 | inhomogeneous gray fiber and mineral mixture | 2 Amosite | 20 Cellulose<br>5 Mineral Wool<br>10 Plant | binder/filler, quartz |

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**Clayton Project No. 46692.00**
**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180539 | #29NH-15-93-C | | | | |
| | Layer 2 | inhomogeneous offwhite compressed mineral mixture | NAD | -- | quartz |
| | Layer 3 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Layer 4 | inhomogeneous gray fibers | trace, <1 Amosite | 50 Cellulose<br>10 Mineral Wool<br>15 Plant<br>3 Hair<br>5 Insect<br>5 Feathers | -- |
| | Total | | 2 | | |
| 180540 | #30NH-15-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | 3 Amosite | 3 Insect<br>15 Cellulose<br>2 Mineral Wool<br>2 Feathers<br>5 Plant | binder/filler, quartz, mastic |
| | Layer 2 | inhomogeneous gray fibers | 4 Chrysotile<br>trace, <1 Amosite | 50 Cellulose<br>20 Insect<br>10 Feathers | binder/filler, mastic |
| | Layer 3 | inhomogeneous tan compressed cellulose wood | NAD | 90 Cellulose | -- |

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**Edison Lab Batch No. B021707290**
**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180540 | #30NH-15-93-F Layer 4 | homogeneous white compressed mineral mixture | NAD | -- | quartz |
| | Total | | 3 | | |
| 180541 | #31NH-16-93-C Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 10 Cellulose<br>3 Plant<br>2 Insect | binder/filler, quartz |
| | Layer 2 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Layer 3 | inhomogeneous gray compressed mastic | NAD | 1 Cellulose | mastic |
| | Total | | trace, <1 | | |
| 180542 | #32NH-16-93-F Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 10 Cellulose<br>10 Insect<br>5 Plant | binder/filler, quartz, mastic |
| | Layer 2 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Layer 3 | homogeneous white fibers | NAD | 95 Cellulose | -- |
| | Total | | NAD | | |

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**March 3, 1993**

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180543 | #33NH-17-93-C | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 5 Cellulose<br>3 Plant<br>2 Insect | binder/filler, quartz |
| | Layer 2 | homogeneous white compressed mineral mixture | NAD | -- | quartz |
| | Layer 3 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | NAD | | |
| 180544 | #34 NH-17-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 4 Insect<br>10 Cellulose<br>2 Mineral Wool<br>10 Plant | binder/filler<br>quartz<br>mastic |
| | Layer 2 | homogeneous gray compressed mineral mixture | NAD | -- | quartz |
| | Layer 3 | inhomogeneous gray fibers | trace, <1 Amosite | 25 Cellulose<br>15 Plant<br>10 Feathers<br>20 Insect | binder/filler<br>mastic<br>quartz |
| | Layer 4 | inhomogeneous tan cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | trace, <1 | | |

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| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180545 | #35 NH-18-93-C | | | | |
| | Layer 1 | inhomogeneous gray fiber mineral mixture | NAD | 10 Cellulose<br>2 Mineral Wool<br>10 Insect<br>5 Plant | binder/filler<br>quartz<br>mastic |
| | Layer 2 | homogeneous gray compressed mineral mixture | NAD | -- | quartz |
| | Layer 3 | inhomogeneous gray compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Layer 4 | inhomogeneous gray compressed mastic | trace <1 Amosite | 40 Cellulose<br>1 Synthetic Fiber | mastic |
| | Layer 5 | inhomogeneous gray compressed fibers | NAD | 35 Cellulose<br>1 Mineral Wool<br>15 Feathers<br>10 Plant<br>5 Insect | mastic |
| | Total | | trace, <1 | | |
| 180546 | #36 N-18-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | 10 Amosite<br>trace, <1 Chrysotile | 5 Cellulose<br>3 Plant | binder/filler, mastic, quartz |

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| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180546 | #36 N-18-93-F | | | | |
| | Layer 2 | inhomogeneous gray compressed mineral mixture | NAD | -- | quartz |
| | Layer 3 | homogeneous offwhite fibers | 90 Amosite | -- | -- |
| | Total | | 10 | | |
| 180547 | #37 N-19-93-C | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 5 Cellulose<br>3 Insect<br>3 Plant | binder/filler, quartz, mastic |
| | Layer 2 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Layer 3 | inhomogeneous gray compressed mineral mixture | NAD | -- | quartz |
| | Layer 4 | inhomogeneous gray fibers | 2 Chrysotile | 25 Cellulose<br>2 Plant<br>10 Insect | mastic |
| | Total | | trace, <1 | | |

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**Edison Lab Batch No. B021707290**
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| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180548 | #38 NH-19-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite<br>trace, <1 Chrysotile | 15 Cellulose<br>1 Mineral Wool<br>2 Insect<br>4 Plant | binder/filler quartz, mastic |
| | Layer 2 | inhomogeneous gray compressed mastic | NAD | -- | mastic |
| | Total | | trace, <1 | | |
| 180549 | #39 NH-20-93-C | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 1 Insect<br>5 Cellulose<br>1 Mineral Wool<br>2 Plant | binder/filler quartz |
| | Layer 2 | inhomogeneous gray compressed mineral mixture | NAD | -- | quartz |
| | Layer 3 | inhomogeneous gray fibers | NAD | 40 Cellulose<br>5 Feathers<br>5 Insect<br>20 Plant | -- |
| | Total | | trace, <1 | | |

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| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180550 | #40 NH-20-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 15 Cellulose<br>3 Synthetic Fibers<br>10 Plant<br>5 Insect | binder/filler<br>quartz<br>mastic |
| | Layer 2 | inhomogeneous offwhite compressed mineral mixture | NAD | -- | quartz |
| | Layer 3 | inhomogeneous gray fibers | NAD | 15 Cellulose<br>40 Insect<br>20 Plant | binder/filler<br>mastic |
| | Layer 4 | inhomogeneous gray compressed cellulose wood | NAD | 90 Cellulose | -- |
| | Total | | NAD | | |
| 180551 | #41 NH-21-93-C | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 10 Cellulose<br>5 Plant | binder/filler<br>quartz |
| | Layer 2 | inhomogeneous gray compressed mineral mixture | NAD | -- | quartz |
| | Layer 3 | inhomogeneous gray fibers | trace, <1 Amosite | 25 Cellulose<br>1 Mineral Wool<br>20 Plant | mastic |
| | Total | | trace, <1 | | |

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| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180552 | #42 NH-21-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 15 Cellulose<br>10 Plant<br>5 Insect | -- |
| | Layer 2 | inhomogeneous gray compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Layer 3 | inhomogeneous gray fibers | NAD | 40 Cellulose<br>2 Hair<br>10 Plant<br>25 Insect | binder/filler, quartz |
| | Total | | NAD | | |
| 180553 | #43 NH-22-93-C | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 20 Cellulose<br>10 Plant | binder/filler, quartz, mastic |
| | Layer 2 | inhomogeneous gray fibers | NAD | 40 Cellulose<br>20 Plant<br>5 Feathers | mastic |
| | Layer 3 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | NAD | | |

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| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180554 | #44 NH-22-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 1 Insect<br>10 Cellulose | binder/filler, quartz |
| | Layer 2 | inhomogeneous gray compressed mineral mixture | NAD | -- | quartz |
| | Total | | NAD | | |
| 180555 | #45 NH-24-93-C | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 5 Cellulose<br>3 Plant | binder/filler, quartz |
| | Layer 2 | inhomogeneous gray fibers | NAD | 10 Cellulose<br>1 Hair<br>50 Plant | binder/filler |
| | Layer 3 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | trace, <1 | | |
| 180556 | #46 NH-24-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 15 Cellulose<br>10 Plant | binder/filler, quartz |
| | Layer 2 | inhomogeneous tan fibers | NAD | 40 Insect<br>20 Plant<br>20 Cellulose | binder/filler |
| | Total | | NAD | | |

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| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180557 | #47 NH-24-93-C | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 20 Cellulose<br>5 Plant | binder/filler, quartz |
| | Layer 2 | inhomogeneous gray compressed mastic | NAD | 10 Cellulose<br>1 Hair | mastic |
| | Layer 3 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | |
| | Layer 4 | inhomogeneous gray compressed mineral mixture | NAD | -- | quartz |
| | Total | | trace, <1 | | |
| 180558 | #48 NH-24-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | trace, <1 Amosite | 10 Plant<br>10 Insect<br>10 Cellulose | binder/filler, quartz |
| | Layer 2 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | trace, <1 | | |
| 180559 | #49 NH-25-93-C | inhomogeneous gray fiber and mineral mixture | NAD | 15 Cellulose<br>10 Plant | binder/filler, quartz |

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| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180560 | #50 NH-25-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 15 Cellulose<br>1 Mineral Wool<br>10 Plant<br>2 Synthetic Fibers<br>5 Insect | binder/filler, quartz |
| | Layer 2 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | NAD | | |
| 180561 | #51 NH-26-93-C | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 20 Cellulose<br>5 Plant | binder/filler, quartz |
| | Layer 2 | inhomogeneous gray compressed mastic | NAD | 40 Cellulose<br>2 Plant | mastic, binder/filler |
| | Total | | NAD | | |
| 180562 | #52 NH-26-93-F | | | | |
| | Layer 1 | inhomogeneous gray fiber and mineral mixture | NAD | 25 Cellulose<br>5 Plant | binder/filler, quartz |
| | Layer 2 | inhomogeneous gray compressed mastic | NAD | 1 Cellulose | mastic |
| | Layer 3 | inhomogeneous tan compressed cellulose wood | NAD | 95 Cellulose | -- |
| | Total | | NAD | | |

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| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180563 | #53 NH-27-93-C | inhomogeneous brown fiber and filler mixture | NAD | 5 Fibrous Glass<br>30 Cellulose | cellulose wood, binder/filler, quartz, mica |
| 150564 | #54 NH-27-93-F | inhomogeneous brown fiber and filler mixture | NAD | 5 Fibrous Glass<br>2 Synthetic Fibers<br>30 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180565 | #55 NH-28-93-C | inhomogeneous brown fiber and filler mixture | NAD | 2 Fibrous Glass<br>2 Synthetic Fibers<br>35 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180566 | #56 NH-28-93-F | inhomogeneous brown fiber and filler mixture | NAD | 5 Fibrous Glass<br>30 Cellulose<br>3 Synthetic Fibers | cellulose wood, binder/filler, quartz, mica, calcite |
| 180567 | #57 NH-29-93-C | inhomogeneous brown fiber and filler mixture | NAD | 5 Fibrous Glass<br>2 Synthetic Fibers<br>25 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180568 | #58 NH-29-93-F | inhomogeneous brown fiber and filler mixture | NAD | 3 Fibrous Glass<br>2 Synthetic Fibers<br>35 Cellulose | cellulose wood, binder/filler, mica, quartz, calcite |
| 180569 | #59 NH-30-93-C | inhomogeneous brown fiber and filler mixture | NAD | 3 Fibrous Glass<br>60 Cellulose<br>2 Synthetic Fibers | cellulose wood, binder/filler, quartz, mica, calcite |

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| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180570 | #60 NH-30-93-F | inhomogeneous brown fiber and filler mixture | NAD | 5 Fibrous Glass<br>65 Cellulose<br>2 Synthetic Fibers | cellulose wood, binder/filler, quartz, mica, calcite |
| 180571 | #61 NH-31-93-C | inhomogeneous brown fiber and filler mixture | NAD | 5 Fibrous Glass<br>50 Cellulose<br>2 Synthetic Fibers | cellulose wood, binder/filler, quartz, mica, calcite |
| 180572 | #62 NH-31-93-F | inhomogeneous brown fiber and filler mixture | NAD | 5 Fibrous Glass<br>50 Cellulose<br>3 Synthetic Fibers | cellulose wood, binder/filler, quartz, mica, calcite |
| 180573 | #63 NH-32-93-C | inhomogeneous brown fiber and filler mixture | NAD | 2 Fibrous Glass<br>55 Cellulose<br>3 Synthetic Fiber | cellulose wood, binder/filler, quartz, mica, calcite |
| 180574 | #64 NH-32-93-F | inhomogeneous brown fiber and filler mixture | NAD | 10 Fibrous Glass<br>5 Synthetic Fibers<br>60 Cellulose | cellulose wood binder/filler, quartz, mica, calcite |
| 180575 | #65 NH-33-93-C | inhomogeneous brown fiber and filler mixture | NAD | 5 Fibrous Glass<br>3 Synthetic Fibers<br>45 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180576 | #66 NH-33-93-F | inhomogeneous brown fiber and filler mixture | NAD | 4 Fibrous Glass<br>3 Synthetic Fibers<br>50 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |

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| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180577 | #67 NH-34-93-F | inhomogeneous brown fiber and filler mixture | NAD | 3 Fibrous Glass<br><1 Synthetic Fibers<br>50 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180578 | #68 NH-34-93-F | inhomogeneous brown fiber and filler mixture | trace, <1 Chrysotile | 2 Fibrous Glass<br>2 Synthetic Fibers<br>65 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180579 | #69 NH-35-93-F | inhomogeneous brown fiber and filler mixture | NAD | 2 Fibrous Glass<br>3 Synthetic Fibers<br>50 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180580 | #70 NH-35-93-F | inhomogeneous brown fiber and filler mixture | NAD | 2 Fibrous Glass<br>2 Synthetic Fibers<br>45 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180581 | #71 NH-36-93-C | inhomogeneous brown fiber and filler mixture | NAD | 1 Fibrous Glass<br>2 Synthetic Fibers<br>45 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180582 | #72 NH-36-93-F | inhomogeneous brown fiber and filler mixture | NAD | 3 Fibrous Glass<br>5 Synthetic Fiber<br>60 Cellulose | bugs, cellulose wood, binder/filler, quartz, mica, calcite |
| 180583 | #73 NH-37-93-C | inhomogeneous brown fiber and filler mixture | NAD | 2 Fibrous Glass<br>10 Synthetic Fibers<br>50 Cellulose | bugs, cellulose wood, binder/filler, quartz, mica, calcite |

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| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180584 | #74 NH-37-93-F | inhomogeneous brown fiber and filler mixture | NAD | 5 Fibrous Glass<br>2 Synthetic Fiber<br>55 Cellulose | bugs, cellulose wood, binder/filler, quartz, mica, calcite |
| 180585 | #75 NH-38-93-C | inhomogeneous brown fiber and filler mixture | NAD | 2 Fibrous Glass<br>3 Synthetic Fibers<br>60 Cellulose | bugs, cellulose wood, binder/filler, quartz, mica, calcite |
| 180586 | #76 NH-38-93-F | inhomogeneous brown fiber and filler mixture | NAD | 3 Fibrous Glass<br>50 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180587 | #77 NH-39-93-C | inhomogeneous brown fiber and filler mixture | NAD | 5 Fibrous Glass<br>45 Cellulose | cellulose wood, binder/filler, quartz, |
| 180588 | #78 NH-39-93-F | inhomogeneous brown fiber and filler mixture | NAD | 3 Fibrous Glass<br>2 Synthetic Fibers | cellulose wood, bugs, binder/filler, quartz, mica, calcite |
| 180589 | #79 NH-40-93-C | inhomogeneous brown fiber and filler mixture | NAD | 2 Fibrous Glass<br>1 Synthetic Fiber<br>60 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180590 | #80 NH-40-93-F | inhomogeneous brown fiber and filler mixture | NAD | 4 Fibrous Glass<br>55 Cellulose | cellulose wood, binder/filler, caclite, quartz, mica |
| 180591 | #81 NH-41-93-C | inhomogeneous brown fiber and filler mixture | NAD | 3 Fibrous Glass<br>55 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |

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| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180592 | #82 NH-41-93-F | inhomogeneous brown fiber and filler mixture | NAD | 5 Fibrous Glass<br>5 Synthetic Fibers<br>60 Cellulose | bugs, cellulose wood, binder/filler, quartz, mica, calcite |
| 180593 | #83 NH-42-93-C | inhomogeneous brown fiber and filler mixture | trace, <1 Chrysotile | 5 Fibrous Glass<br>3 Synthetic Fibers<br>60 Cellulose | cellulose wood, binder/filler, quartz, mica, calicte |
| 180594 | #84 NH-42-93-F | inhomogeneous brown fiber and filler mixture | trace, <1 Amosite | 4 Fibrous Glass<br>3 Synthetic Fibers<br>60 Cellulose | bugs, cellulose wood, binder/filler, quartz, mica, calcite |
| 180595 | #85 NH-43-93-C | inhomogeneous brown fiber and filler mixture | NAD | 3 Fibrous Glass<br>4 Synthetic Fibers<br>65 Cellulose | bugs, cellulose wood, binder/filler, quartz, mica, calcite |
| 180596 | #86 NH-43-93-F | inhomogeneous brown fiber and filler mixture | NAD | 2 Fibrous Glass<br>4 Synthetic Fibers<br>65 Cellulose | bugs, cellulose wood, binder/filler, quartz, mica, calcite |
| 180597 | #87 NH-44-93-C | inhomogeneous brown fiber and filler mixture | NAD | 5 Fibrous Glass<br>3 Synthetic Fibers<br>60 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180598 | #88 NH-44-93-F | inhomogeneous brown fiber and filler mixture | NAD | 5 Fibrous Glass<br>10 Synthetic Fibers<br>50 Cellulose | bugs, cellulose wood, binder/filler, quartz, mica, calcite |

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|---|---|---|---|---|---|
| 180599 | #89 NH-45-93-C | inhomogeneous brown fiber and filler mixture | NAD | 2 Synthetic Fiber<br>3 Fibrous Glass<br>50 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180600 | #90 NH-45-93-F | inhomogeneous brown fiber and filler mixture | NAD | 3 Synthetic Fiber<br>2 Fibrous Glass<br>60 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180601 | #91 NH-46-93-C | inhomogeneous brown fiber and filler mixture | NAD | 2 Fibrous Glass<br>5 Synthetic Fibers<br>55 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180602 | #92 NH-46-93-F | inhomogeneous brown fiber and filler mixture | NAD | 3 Fibrous Glass<br><1 Synthetic Fiber<br>70 Cellulose | bugs, cellulose wood, binder/filler, quartz, mica, calcite |
| 180603 | #93 NH-47-93-C | inhomogeneous brown fiber and filler mixture | NAD | 5 Fibrous Glass<br>60 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |
| 180604 | #94 NH-47-93-F | inhomogeneous brown fiber and filler mixture | NAD | 5 Fibrous Glass<br>3 Synthetic Fiber<br>60 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite, paint |
| 180605 | #95 NH-48-93-C | inhomogeneous brown fiber and filler mixture | NAD | 2 Synthetic Fiber<br>3 Fibrous Glass<br>50 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |

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| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 180606 | #96 NH-48-93-F | inhomogeneous brown fiber and filler mixture | NAD | 3 Synthetic Fiber<br>5 Fibrous Glass<br>60 Cellulose | cellulose wood, binder/filler, quartz, mica, calcite |

--Information not available or not applicable.

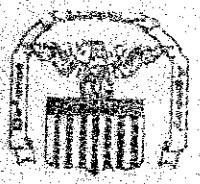
Analytical Method: USEPA. 1982. *Interim Method for the Determination of Asbestos in Bulk Insulation Samples*. EPA-600/M4-82-020. Washington: GPO, December.

Percentages are visual estimates based on volume. (Unless specified)

Limit of Detection: <1%
Limit of Quantitation: 1%

NOTE: The reliable limit of quantitation of the method is 1%, although asbestos may be qualitatively detected at concentrations less than 1%. Samples for which asbestos is detected at <1% are reported as "trace, <1%". No asbestos detected (NAD) indicates that no fibers were observed.

Clayton's Edison, New Jersey laboratory is accredited by the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program (NVLAP Lab No. 1125-02). This test report relates only to the items tested and may not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.



# DEFENSE LOGISTICS AGENCY

Defense National Stockpile Zone - Hammond
3200 Sheffield Avenue
Hammond, Indiana 46327-1002

Message Priority
[ ] Urgent [ ] Routine

NUMBER OF PAGES (Including this one) 3

TO: Russel Bywaters

LOCATION: DLA/DNSZ-O

TELEPHONE: Fax/ /

Voice/ /

**********

FROM: ALLEN R BIXLER CHIEF
LOCATION: QUALITY ASSURANCE DIVISION
(DLA/DNSZ-HMQ)

TELEPHONE: Fax (219) 937-5284
Voice (219) 937-5274

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# Results of Analysis of Bulk Samples for Asbestos Content for DLA/DNSZ/HMSR-New Haven Depot

Clayton Project No. 54222.00
Edison Lab Batch No. B030409744
March 10, 1994

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 204992 | NH-05A-94-F<br>210-3-66<br>(floor) | Inhomogeneous gray/black fiber and mineral mixture | 5 Chrysotile<br>trace, <1 Amosite | 30 Cellulose<br>10 Plant<br>10 Mineral Wool<br>10 Insect<br>5 Feathers | Binder/Filler, Paint Mastic |
| | Total | | 5 | | |

--information not available or not applicable.

Analytical Method: USEPA. 1982. *Interim Method for the Determination of Asbestos in Bulk Insulation Samples.* EPA-600/M4-82-020. Washington: GPO, December.

Percentages are visual estimates based on volume. (Unless specified)

Limit of Detection: <1%
Limit of Quantitation: 1%

NOTE: The reliable limit of quantitation of the method is 1%, although asbestos may be qualitatively detected at concentrations less than 1%. Samples for which asbestos is detected at <1% are reported as "trace, <1%". No asbestos detected (NAD) indicates that no fibers were observed.

Clayton's Edison, New Jersey laboratory is accredited by the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program (NVLAP Lab No. 1125-02). This test report relates only to the items tested and may not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

Clayton
ENVIRONMENTAL CONSULTANTS

# Results of Analysis of Bulk Samples for Asbestos Content for DEA/DNSZ/HMSB-New Haven Depot

Clayton Project No. 54222.00
Edison Lab Batch No. B030409746
March 16, 1994

| Lab Sample No. | Client Sample Identification | Sample Description | % and Type Asbestos | % and Type Non-asbestos Fibers | Type Non-fibrous Materials |
|---|---|---|---|---|---|
| 204990 | NH-03A-94-F<br>3-10-94 (floor) | Inhomogeneous gray/black fiber and mineral mixture | 2 Chrysotile<br>trace, <1 Amosite | 30 Cellulose<br>5 Mineral Wool<br>10 Plant<br>10 Insect<br>5 Feathers | Binder/Filler, Mastic Paint |
| | Total | | 2 | | |
| 204991 | NH-04A-94-C<br>Layer 1<br>3-10-94 (ceiling) | Inhomogeneous gray/black fiber and mineral mixture | trace, <1 Chrysotile | 40 Cellulose<br>5 Mineral Wool<br>5 Insect<br>5 Feathers<br>5 Plant | Binder/Filler, Mastic Paint |
| | Layer 2 | Inhomogeneous off-white fibers | No Asbestos Detected (NAD) | 90 Synthetic Fiber | -- |
| | Total | | trace, <1 | | |

# STATEMENT OF WORK
## PRAIRIE RESTORATION - PLANTING NO. 3
## DEFENSE LOGISTICS AGENCY
## DEFENSE NATIONAL STOCKPILE CENTER
## NEW HAVEN, IN, DEPOT

March 12, 1996

**SCOPE**

This project involves the site preparation, seedbed preparation, furnishing and planting of native grass and forb seed, and a three year program of monitoring and management of approximately 79.5 acres of land and approximately 2,800 lineal feet of drainage ditches (three ditches) at the DLA/Defense National Stockpile New Haven Depot, located approximately three miles east of New Haven, IN. More specifically, 15411 Dawkins Rd., New Haven, IN.

A marked-up copy of the depot site plan showing the areas to be included in the work and a listing of the areas is attached (Attachment 1).

All tracts are essentially cool season grass lawns except for approximately 11 acres in Areas 319 and 322 which are partially wooded. Area 322/325 also contains four depressed areas of approximately one acre each which are seasonally wet and contain some varieties of plants usually found in sedge ghetto environments. The drainage ditches also contain some resident native plants. A list of some of the plant species observed and identified during a site assessment by representatives of the National Biological Survey is attached (Attachment 2).

All site and seedbed preparation is to be done by the Contractor. Prepare documentation identifying the method or methods to be used for site and seedbed preparation in each of the areas on the project..

The overall goal of the project is the reintroduction of native plant species, creating habitat for birds and small animals, and improvement of the environment. Prepare and present seed lists to be used for each area on this project. Seed lists must show the common and scientific name of each plant, the weight (ounces of forb seed, pounds of grass seed) for each plant, the total grass to forb ratio, and the total pounds per acre of grass seed and forb seed. The site is divided into separate areas by roads and railroad tracks and this should be reflected in the overall plan. It is desired that areas more visible from the highway and local roads have a greater number and variety of forbs in the planting mix.

The Prairies of Indiana, Robert F. Betz, 1978, Northeastern Illinois Univeristy, presents an overview of the prairie types found in Indiana and their plant compositions. A copy of this paper is attached for reference (Attachment 3).

All grass and forb seed used on this project must have either been picked from native remnants in Indiana or picked from nursery plants which themselves were grown from seeds gathered in native remnants in Indiana. The Contractor must provide written certification from the seed supplier naming the source and location thereof of all seed used on this project. A list of prairie plants to consider for use in this project is attached (Attachment 4).

If seed cannot be obtained from native Indiana sources, the Contractor must certify that fact and provide seed utilizing the following guidance: Forb seed shall have been grown in Illinois, Michigan, western Ohio, Wisconsin, southeastern Minnesota, or eastern Iowa. Grass seed shall have been grown within a range of 200 miles north or south of New Haven, IN (41°04'12" N Lat.), and be from one or more of the state areas previously named. **No seed from western or southern sources shall be allowed.** Written certification as described in the preceding paragraph must be provided.

Determine the optimum times for each phase of the work to maximize the chances for success and proceed accordingly.

The Contractor is to monitor and manage the restoration for a period of three years (three full growing seasons). Prepare and present a complete management plan that will be followed in each area for each of the three years. Approximately 25 acres were planted in 1995. Those areas should also be monitored and managed as part of this work, bringing to approximately 104 the total acreage to be managed.

**Open Storage Area 8**
Bounded by Delaware Ave. on east, railroad track on west, Track 6 on south and north side of area 111A on north. 15.7 Acres

**Area 11/14**
Bounded by Open Storage Area 125 on east, gravel road on the west, Track 14 on the south and Track 11 on the north. 5.6 Acres

**Bermuda Plaza Area**
Bounded by T-111 on the east, Alabama and gravel road on the west, paved road on the south, and Track 14 on the north. 4.7 Acres

**Area north of Open Storage Area 600** 1.7 Acres

**Open Storage Areas 601 and 602**
Bounded by Connecticut on the west, the centerline of Iowa Ave. on the east, perimeter fence on the south, and Plantation Road on the north. 16.6 Acres

**Open Storage Area 226** 5.4 Acres

**Open Storage Area 325 south**
Bounded by the centerline of Iowa Ave. on the west, the perimeter fence on the east, the perimeter fence on the south, and Track 22 opn the north. 2.8 Acres

**Open Storage Area 322/325 north**
Bounded by the perimeter fence on the east, the drainage ditch on the west, Track 22 on the south, and Track 14 on the north. 14.3 Acres

**Open Storage Area 319**
Bounded by Track 11 on the north and east, the drainage ditch on the west, and Track 14 on the south. 5.1 Acres

**Open Storage Area 316**
Bounded by Track 9 on the north and east, the drainage ditch on the west, and Track 11 on the south. 7.6 Acres

79.5 Acres Total

**East Drainage Ditch**

Running north from Track 22 to the north perimeter fence in Area 312. 1,320 Feet

**West Drainage Ditch**

Running north from the north side of Open Storage Area 7A to its intersection with the east-west ditch along Edgerton Rd. 680 Feet

**North Drainage Ditch**

Running east-west parallel with Edgerton Rd. from the perimeter fence on the west to the perimeter fence on the east. 800 Feet

2,800 Feet Total

# ATTACHMENT 2

## PRAIRIE RESTORATION - PLANTING NO. 3
## DEFENSE LOGISTICS AGENCY
## DEFENSE NATIONAL STOCKPILE CENTER
## NEW HAVEN, IN, DEPOT

Species observed by scientists from the National Biological Survey

| Species | Scientific Name |
|---|---|
| **Grasses** | |
| Fescue | Festuca spp. |
| Bludgrass | Poa sp. |
| Foxtail | Setaria |
| **Herbs** | |
| Strawberry | Frageria Virginiana |
| Teasel | Dipsacus sylvestris |
| Dandelion | Taraxacum officinale |
| Clover | Trifolium repens, et al |
| Yarrow | Achillea millefolium |
| Plantain | Plantago lanceolata |
| Goldenrod | Solidago spp. |
| Aster | Aster spp. |
| Healall | Prunella vulgaris |
| Bindweed | Convolvulus sp. |
| Winter Cress | Barbarea vulgaris |
| Whitlow grass | Braba verna |
| Wild Carrot | Daucus Carota |
| Sweet Clover | Melilotus sp. |
| Evening Primrose | Oenothera biennis |
| Kidney Leaved Buttercup | Ranunculus abortivus |
| Durly Dock | Rumex crispus |
| **Woody Species** | |
| Red Osier Dogwood | Cornus stolonifera |
| Fire Cherry | Prunus pensylvanica |
| Cottonwood | Populus deltoides |
| Apple | Pyrus malus |
| Willow | Salix sp. |

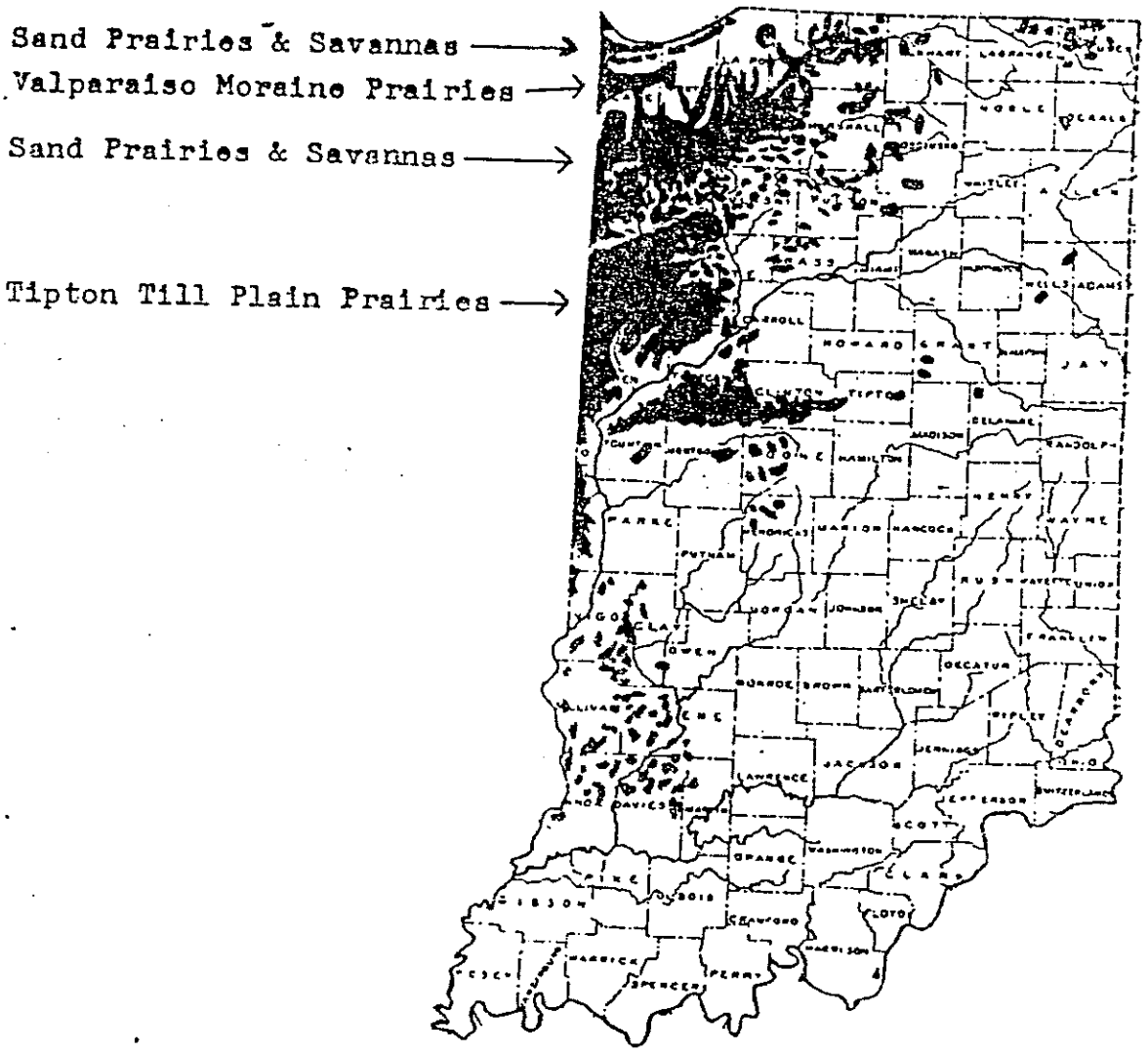
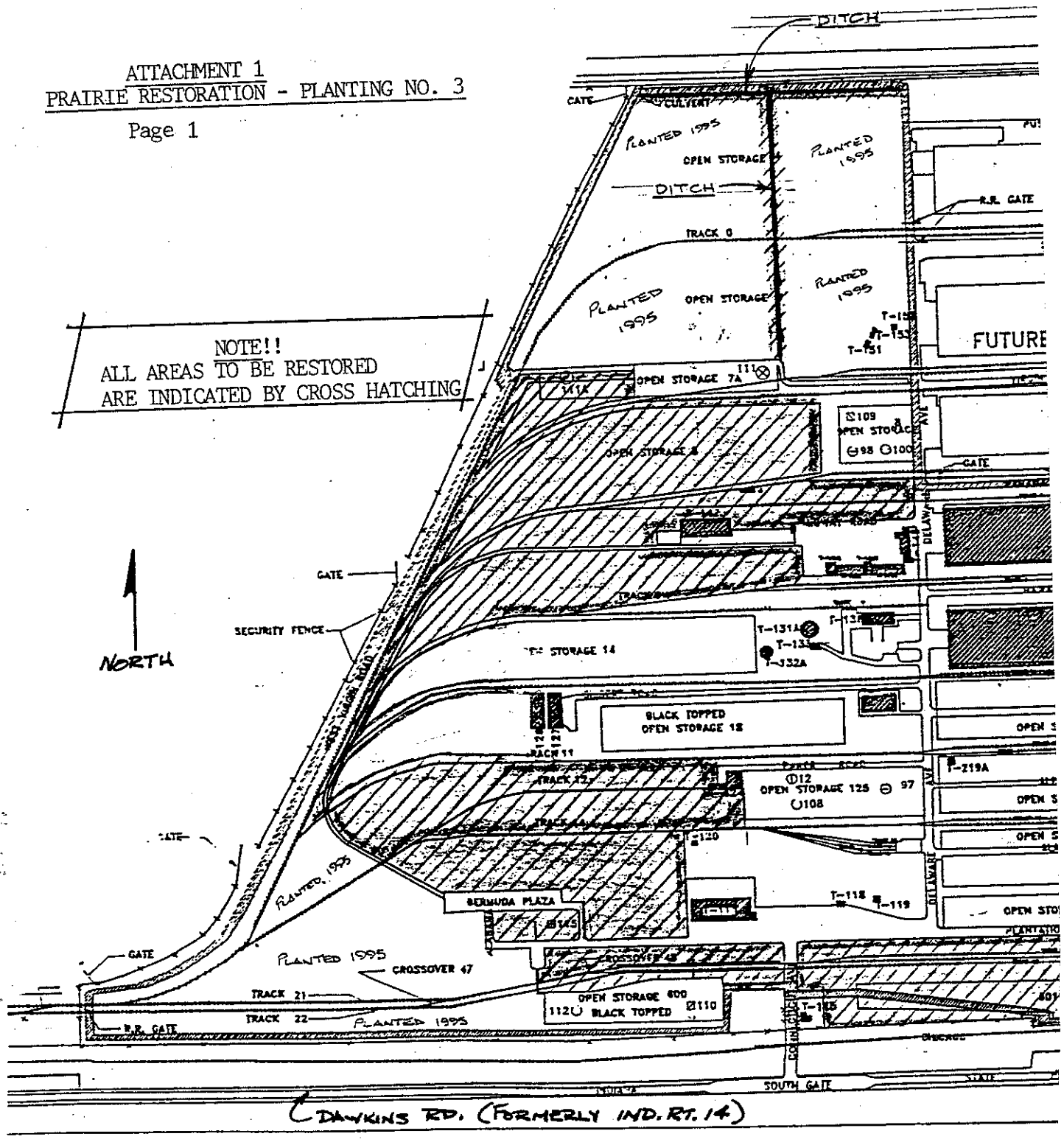
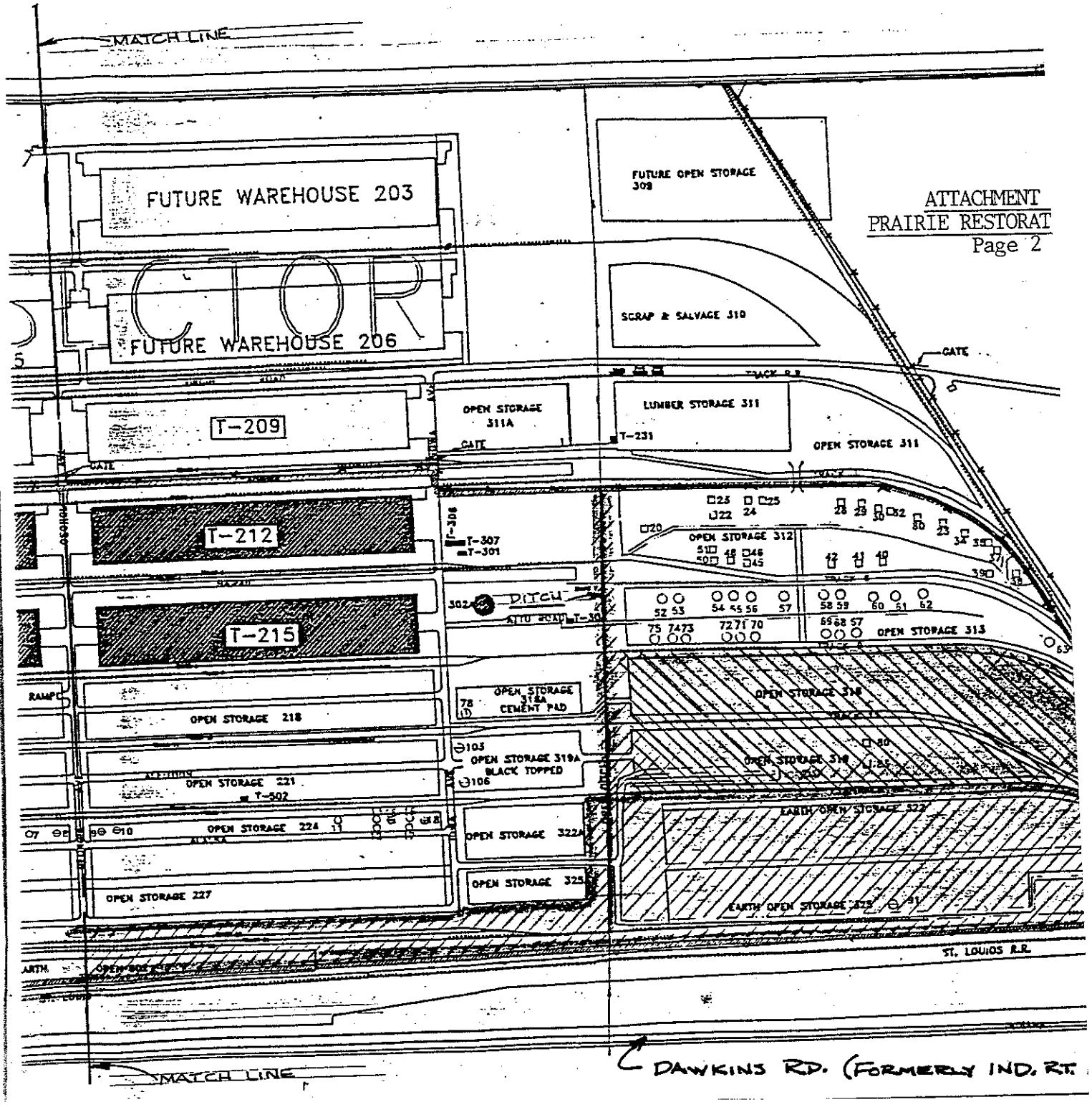



Fig. 1. Map of Indiana showing the distribution of major types of prairies and savannas in presettlement times. Modified from E.N. Transeau (1935), Ecology 16: 423-457.

ATTACHMENT 1
PRAIRIE RESTORATION - PLANTING NO. 3

Page 1






ATTACHMENT
PRAIRIE RESTORAT
Page 2

sand and glacial till which gave rise to the sand and silt-loam areas on which the prairies developed. The sand region of northwest Indiana is divided into two unequal parts by the 24-32 km (15-20 mile) wide Valparaiso Moraine, viz., the relatively small Calumet Lacustrine Plain (Lake Chicago Plain) in the northern parts of Lake, Porter and LaPorte counties, and the much larger Kankakee Outwash Plain in the southern parts of Lake and Porter counties, major portions of Newton, Jasper, Stark, St. Joseph, and parts of Marshall, Fulton, Cass and White counties. To the south of the sand area is a region of glacial till (Tipton Till Plain). Superimposing Transeau's Map (Fig. 1) on that of the physiographic units (Fig. 2), reveals the banded arrangement of the Indiana prairies. Beginning at the head of Lake Michigan and moving southward, the presettlement Indiana prairies are arranged in the following way: a northern belt of sand prairies and savannas of the Calumet Lacustrine Plain, followed by black silt-loam prairies of the Valparaiso Moraine, another belt of sand prairies and savannas of the Kankakee Outwash Plain, and finally a belt of black silt-loam prairies of the Tipton Till Plain. This rather simplified arrangement is complicated by the presence of groves, marshes and brush scattered along the prairie communities.

The prairies outliers in the Morainal Lake Area of northeastern Indiana, such as Jackson Prairie in Steuben county, Turkey Prairie in Kosciusko and English Prairie in northern LaGrange counties, are built on sandy loams or loamy sands and have characteristics of both the sand and black soil prairies. The prairie outliers in the eastern parts of the Tipton Till Plain, such as the Cabin Creek Raised Bog (fen) in Randolph county, are black silt-loam prairies.

The third major type, the dry gravel hill prairie, was limited to the gravel terraces (or breaks) along the larger rivers, such as the Wabash and White.

## FLORAL COMPOSITION

The Indiana prairies usually contain varying numbers and mixtures of grass species which are usually considered as dominants in the tall grass prairies. Depending on the type of soil, height of the water table, geographical area and the amount of disturbance, one or more species are likely to be present in greater amounts than the others. In general, little blue stem (Andropogon scoparius) and porcupine grass (Stipa spartea) are major components in dry sand prairies and black oak savannas, bluejoint grass (Calamagrostis canadensis) and prairie cord grass (Spartina pectinata) in wet prairies, and side-oats grama grass (Bouteloua curtipendula) a major dominant in calcareous dry prairies. Big bluestem grass (Andropogon gerardii) and Indian grass (Sorghastrum nutans) play a dominant role in the mesic black silt-loam prairies, but are common in almost all types of prairie. Switch grass (Panicum virgatum) tends to form rather heavy stands in lightly disturbed, periodically wet prairies, while prairie dropseed (Sporobolus heterolepis) tends to become a dominant in virgin mesic prairies with a long history of freedom from disturbance.

While the dominant prairie grasses, with their rather wide ecological amplitudes, provide the background to the various kinds of prairies, it is the presence (or absence) of certain species of prairie forbs that helps in separating the different kinds of Indiana prairies. Using these forbs as indicators, together with the dominant grasses, one can distinguish three different types of Indiana sand prairies, three types of black silt-loam prairies and one type of dry gravel hill prairie.

## THE SAND PRAIRIES

Approximately half of the pre-settlement prairies in Indiana were sand prairies and black oak savannas. While the two sand prairie regions of Indiana held many species in common, there were differences in the numbers and kinds of prairie forbs. In general, the prairies in the Calumet region were richer than those in the Kankakee region. There appear to be three different types of Indiana sand prairies: (1) dry sand prairies and black oak savannas; (2) wet, acid sand prairies and (3) wet, alkaline sand prairies.

Dry Sand Prairies and Black Oak Savannas. These prairies are found throughout the sand regions of Indiana on sand ridges and dunes. The dominant grass is little bluestem which occurs usually in compact clumps.

It would appear that in pre-settlement times this plant community was primarily dry sand prairie with a light scattering of black oak (Quercus velutina), which was maintained by the recurring prairie fires that swept through the region. With the cessation of these fires at the time of settlement, the black oaks increased at the expense of the prairie vegetation, resulting in a even age stand of black oak woodland with a depauperate ground cover of small shrubs, such as blueberry (Vaccinium sp.) and huckleberry (Gaylussacia baccata), woodland plants, such as wild sarsaparilla (Aralia nudicaulis) and Solomon's seal (Polygonatum canaliculatum), and a few species of remnant sand prairie plants. Although never plowed, many of these present-day black oak woodlands are almost beyond recovery as prairie without some cutting of the timber, coupled with annual fires and good prairie management. Some characteristic species of this community are:

Amorpha canescens (lead plant)
Asclepias tuberosa (butterfly weed)
Aster linariifolius (flax-leaved aster)
Baptisia leucantha (white wild indigo)
Cereopsis lanceolata (sand cereopsis)
Helianthemum sp. (frost weeds)
Helianthus occidentalis (Western sunflower)
Lechea sp. (pinweeds)
Lespedeza capitata (round-headed bush clover)
Liatris aspera (rough blazing star)
Lithospermum croceum (hairy puccoon)
Lupinus perennis occidentalis (wild lupine)
Opuntia humifusa (prickly pear)
Phlox bifida (sand phlox)
Quercus velutina (black oak)
Tephrosia virginiana (hoary pea)

Wet Acid Sand Prairies (Wet Sand Prairies). These prairies are found in the swales and other low places in the sand regions of Indiana. Before the digging of drainage ditches in the Kankakee Outwash Plain, they were much more extensive than at present:

> It (the Kankakee River) being very crooked and the land on either side being low and marshy, the water moves off very slowly, and these low lands, forming what is familiarly known as the KANKAKEE MARSH, are for quite a period of time each year covered with from one to three feet of water.

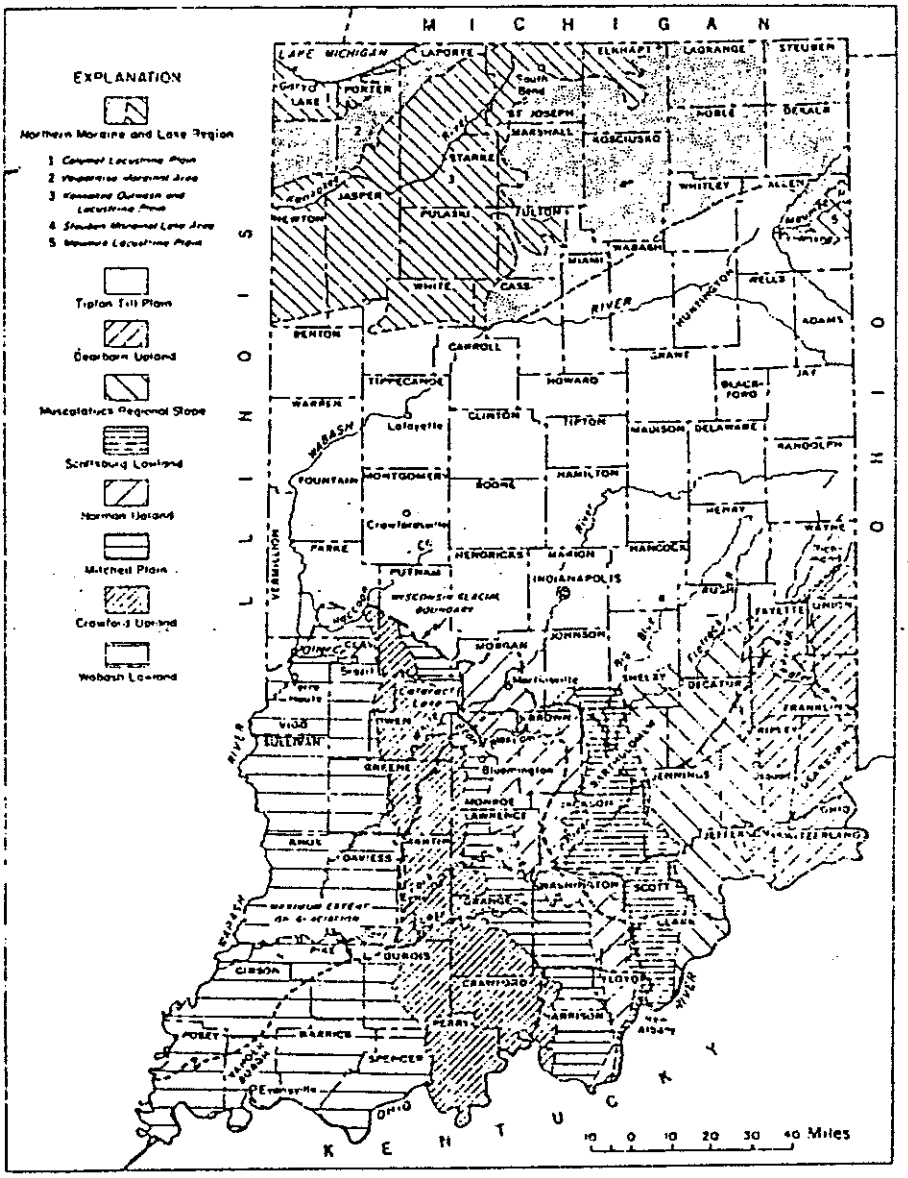



Fig. 2. Map of Indiana showing physiographic units and glacial boundaries. Modified from Indiana Geol. Survey Rept. Prog. 7., fig. 1.

> About six sections of this marsh land in the southeast corner of our county (Lake) are covered with timber, composed..... The balance of these wet lands, running west to the State line, is open marsh, covered with a luxuriant growth of wild grasses, wild rice and flags.....The number of acres of this wet land in the Kankakee valley in Lake county is about sixty thousand, and in the seven counties through which the Kankakee river flows in this State is about six hundred thousand. (Brown 1884).

Blue-joint grass and prairie cord grass are the dominant grasses. Some characteristic species of this community are:

Aletris farinosa (colic root)
Asclepias hirtella (green milkweed)
Calopogon pulchellus (grass pink orchid)
Gentiana saponaria (soapwort gentian)
Gerardia purpurea (purple false foxglove)
Habenaria lacera (ragged fringed orchid)
Houstonia caerulea (bluets)
Osmunda cinnamomea (cinnamon fern)
Osmunda regalis spectabilis (royal fern)
Polygala cruciata (cross milkwort)
Viola lanceolata (lance-leaved violet)

Wet Alkaline Sand Prairies. These prairies are confined to the low swales in the dune region within two km or so of Lake Michigan. The calcareous waters of the lake moving up through the sand produces an alkaline condition which enables a community of caliciphiles (together with other prairie species) to thrive. The dominant grasses are similar to those of the wet acid sand prairies. Some characteristic species are:

Aster ptarmicoides (stiff aster)
Buchnera americana (blue hearts)
Cypripedium reginae (showy lady's slipper)
Gentiana crinita (fringed gentian)
Hypericum kalmianum (Kalm's St. John's wort)
Liatris cylindracea (cylindrical blazing star)
Liparis loeselii (green twayblade)
Potentilla fruticosa (shrubby cinquefoil)
Sabbatia angularis (rose gentian)
Tofieldia glutinosa (false asphodel)

## BLACK SILT-LOAM PRAIRIES

Disregarding some geographical differences, these silt-loam prairies are similar to those found in Illinois and Iowa. There appear to be three different types: (1) mesic (or upland), (2) wet (or lowland), and (3) alkaline fens.

Mesic Prairies. These prairies are found on the better drained parts of the moraines and till plains. Because of their high agricultural value, they were destroyed early in the settlement period, and for that reason very few remnants exist today in Indiana. The dominant grasses are big bluestem, Indian grass, prairie cordgrass, and switch grass. Some characteristic species are:

Amorpha canescens (lead plant)
Anemone cylindrica (thimbleweed)
Asclepias viridiflora (green milkweed)
Aster laevis (smooth blue aster)
Baptisia leucophaea (cream wild indigo)
Ceanothus americanus (New Jersey tea)
Coreopsis palmata (prairie coreopsis)
Eryngium yuccifolium (rattlesnake master)
Gentiana puberula (prairie gentian)
Liatris pycnostachya (prairie blazing star)
Lilium philadelphicum andinum (prairie lily)
Oxalis violacea (purple sorrel)
Panicum leibergii (Leiberg's panic grass)
Petalostemum candidum (white prairie clover)
Petalostemum purpureum (purple prairie clover)
Phlox pilosa (prairie phlox)
Prenanthes aspera (rough white lettuce)
Ratibida pinnata (yellow cone flower)
Silphium laciniatum (prairie compass plant)
Silphium terebinthinaceum (prairie dock)
Solidago rigida (prairie goldenrod)
Viola pedatifida (prairie violet)

Wet Prairies. These prairies are found on the lower poorly drained portions of moraines and till plains. Like the mesic prairies they were destroyed because of their high agricultural value. With the advent of tile drainage in the latter part of the nineteenth century their fate was sealed; remnants are not common in Indiana today. The dominant grasses are prairie cord grass and blue-joint grass. Some characteristic species are:

Asclepias sullivantii (prairie milkweed)
Cacalia tuberosa (Indian plantain)
Galium obtusum (wild madder)
Gentiana andrewsii (bottle gentian)
Habenaria leucophaea (white fringed orchid)
Lilium michiganense (Turk's cap lily)
Lysimachia quadriflora (narrow-leaved loosestrife)
Oxypolis rigidior (cowbane)
Phlox glaberrima interior (marsh phlox)
Prenanthes racemosa (glaucous white lettuce)
Thalictrum dasycarpum (purple meadow rue)
Zizia aurea (golden Alexanders)

Alkaline Fens. These prairies are found on the low, springy, calcareous parts of moraine and till plains. They are more common in the eastern prairies of Indiana and Ohio than on the prairies to the west. The dominant grasses are prairie cordgrass and blue-joint grass. Some characteristic caliciphilic species found in this community are:

Angelica atropurpurea (great angelica)
Cirsium muticum (swamp thistle)
Chelone glabra (turtlehead)
Cypripedium candidum (white lady's slipper)
Filipendula rubra (queen-of-the-prairie)
Lobelia kalmii (kalm's lobelia)
Parnassia glauca (grass-of-Parnassus)
Pedicularis lanceolata (marsh betony)
Solidago ohiensis (Ohio goldenrod)

## DRY GRAVEL HILL PRAIRIES

In pre-settlement times these prairies were probably uncommon in Indiana and confined for the most part to the gravel terraces (or breaks) of the Wabash and White River valleys. The dominant grasses are side-oats grama grass, little bluestem, and porcupine grass. Some characteristic species are:

Allium cernuum (nodding wild onion)
Amorpha canescens (lead plant)
Arenaria patula (slender sandwort)
Aster oblongifolius (aromatic aster)
Astragalus tennesseensis (Tennessee milk vetch)
Kuhnia eupatorioides corymbulosa (false boneset)
Linum sulcatum (grooved yellow flax)

Lithospermum incisum (fringed puccoon)
Petalostemum purpureum (purple prairie clover)
Psoralea tenuiflora (scurfy pea)
Vulfenia bullii (kitten tails)

## REMNANT INDIANA PRAIRIES

Like its neighboring states, Indiana has lost most of its prairies. What is left are bits and scraps scattered in old settler cemeteries, along railroad rights-of-way and in tracts of varying size that are of low agricultural value. The following list of remnant prairies in Indiana is not necessarily complete, since there are undoubtedly others that are still to be found.

Sand Prairie Remnants. The 121 ha (300 acre) Hoosier Prairie, a complex mosaic of black oak savanna, dry prairie, wet acid sand prairie and marsh, west of Griffith, Lake County, is a fine example of Indiana sand prairies on the Calumet plain. Over 300 species of native flowering plants have been found on the tract, including the prairie parsley (Polytaenia nuttallii), three species of gentians, and various species of orchids. Due to the persistent efforts of relatively few conservationists, it is now being purchased by the state of Indiana and will be managed as Indiana's first prairie preserve.

The 20 ha (50 acre) Clark Prairie, a combination of black oak savanna, dry prairie, wet alkaline sand prairie, and marsh, near Lake Michigan west of Gary, Lake County, is interesting in that it probably contains the best remnant of alkaline sand prairie left in Indiana, with numerous terrestial orchids, fringed gentians and lilies. In addition, the open lagoons in the area contain rich populations of both white and yellow water lilies (Nymphaea tuberosa and Nuphar advena). Moreover, the dune ridges are some of the last refuges for paper birch (Betula papyrifera), jack pine (Pinus banksiana) and buffalo berry (Shepherdia canadensis) in northwestern Indiana.

The Hammond Prairie, a 40 ha (100 acre) tract on the eastern outskirts of Hammond, Lake County, is a complex mixture of black oak savanna, dry sand, and wet acid sand prairies, and marsh. In late spring and early summer, the prairie is a riot of color, especially if previously burned, with much Indian paint brush (Castilleja coccinea), hoary puccoon (Lithospermum canescens), and prairie phlox (Phlox pilosa). Many species of orchids are common on the prairie, including the yellow lady's slipper orchid (Cypripedium calceolus) and showy lady's slipper (C. reginae), grass pink orchid (Calopogon pulchellus) and tubercled orchid (Habenaria flava herbiola).

Some of the best dry and wet acid sand prairie remnants are to be found along railroad rights-of-way in Starke, Porter, Jasper and LaPorte counties. Many of these prairies are certainly virgin, and typical prairie grasses, such as little and big bluestem, Indian grass, blue-joint grass, prairie cord grass and switch grass, mingle with lead plant, white wild indigo (Baptisia leucantha), flowering spurge (Euphorbia corollata), Culver's root (Veronicastrum virginicum), marsh phlox (Phlox glaberrima interior) and golden Alexanders (Zizia aurea).

Scattered through the sand country on the dunes and ridges are old settler cemeteries, with dry sand prairies and black oak savannas. Because of constant mowing, many are somewhat degraded. With cessation of mowing, a few could be restored to their former condition. In addition to the dominant little bluestem, butterfly weed (Asclepias tuberosa), sky-blue aster (Aster azureus), western sunflower (Helianthus occidentalis), rough blazing star (Liatris aspera) and prairie willow (Salix humilis) are common components of these cemetery prairies.

A certain amount of dry prairie and black oak savanna exists within the Indiana Dunes State Park and the Indiana Lakeshore National Park in Porter County. However, because of the lack of fires for decades, much of this prairie has been subverted by the rampant growth of black oak, so what was probably black oak savanna is now black oak woods. Certain sections are now being burned in an effort to reverse this trend.

Black Silt-Loam Prairie Remnants. Because of their rich agricultural value, very few remnants of these types of prairie survive. Some of the best remnants in Indiana are still to be found along certain sections of railroad rights-of-way in central Benton and southern Newton counties. Some degraded remnants of the Valparaiso Moraine prairies are found along railroad tracks in western Lake County. In northern Kosciusko County in eastern Indiana there is a small degraded remnant of the Turkey Prairie outlier.

One of the finest examples of mesic black-soil prairie on the Valparaiso Moraine is found in the German Methodist Cemetery in western Lake County. Prairie gentians (Gentiana puberula), prairie lilies (Lilium philadelphicum andinum), purple prairie clover (Petalostemum purpureum), Leiberg's panic grass (Panicum leibergii) and alum root (Heuchera richardsonii) are just a few of the prairie forbs and grasses found in a sward of prairie dropseed. The prairie appears to be virgin and stands approximately six inches above the surrounding eroded fields. Unfortunately, it is [illegible] and diggings from the gravesites are being mixed into the prairie.

The Granville Cemetery prairie, overlooking the Wabash River in central Tippecanoe County and presently being managed, contains various prairie plants, including side-oats grama grass, lead plant, false boneset (Kuhnia eupatorioides corymbulosa), New Jersey tea (Ceanothus americanus) and yellow cone flower (Ratibida pinnata). It is the only remnant known of the Wea prairie outlier.

Around the tombstones in the old settler Jackson Prairie Cemetery in western Steuben County in extreme northeastern Indiana, grow side-oats grama grass, big and little bluestem, Indian grass, Western sunflower (Helianthus occidentalis), Illinois tick trefoil (Desmodium illinoense) and yellow coneflower, remnants of the Jackson Prairie outlier. It is presently being mowed, but with proper management could return to a more natural condition.

Along the railroad right-of-way in central Tipton county south of Kokomo is a very rich prairie, a relic of Indian Prairie outlier. One of the eastern-most stations for the purple prairie clover (Petalostemum purpureum), it contains nearly fifty prairie species.

Dry Gravel Hill Prairie Remnants. Only one remnant of this rare type of prairie has been found in Indiana. Found on a gravel knoll overlooking Wea Creek, a tributary of the Wabash River in Tippecanoe County, it is no more than 0.1 ha (.25 acre)

in size. Various grasses, including side-oats grama, hairy grama (Bouteloua hirsuta), porcupine grass, together with Western wall flower (Erysimum asperum), lead plant, false toadflax (Commandra richardsiana), purple prairie clover and fringed puccoon (Lithospermum incisum) are a few of the species still present in this tiny remnant.

Formerly, prairie satin grass (Muhlenbergia cuspidata), scurfy pea (Psoralea tenuiflora) and Tennessee milkvetch (Astragalus tennesseensis) were found in the vicinity, and presumably were collected on the more extensive prairie that once existed there (Deam 1940, Stuart 1902). The original prairie must have covered a substantial portion of the gravel ridge running along Wea Creek, but gravel mining operations have almost completely eliminated sections of the ridge. In addition, the lack of prairie fires in modern times has enabled the adjacent forest to penetrate prairie portions of the hill.

## CONCLUSION

Although the prairies of Indiana in pre-settlement times occupied a relatively small area as compared to the area occupied by prairie in the states to the west, they are interesting because they occupied a region where the vegetation was transitional or ecotonal. Here on the plains of Indiana in what is considered a forest climate, prairie and deciduous forest mingled in a complex mosaic of trees and grass. It is important that the remnants of these interesting plant communities be preserved and studied in order to better understand the nature of the tall grass prairie.

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# ATTACHMENT 4

## PRAIRIE RESTORATION - PLANTING NO. 3
## DEFENSE LOGISTICS AGENCY
## DEFENSE NATIONAL STOCKPILE CENTER
## NEW HAVEN, IN, DEPOT

List of prairie plants that may be introduced.

| Species | Scientific Name |
|---|---|
| **Grasses** | |
| Big Bluestem | Andropogon gerardi |
| Little Bluestem | Andropogon scoparius |
| Side Oats Grama | Bouteloua curtipendula |
| Blue Joint Grass | Calamagrostis canadensis |
| Leiberg's Panic Grass | Panicum leibergii |
| Switch Grass | Panicum virgatum |
| Indian Grass | Sorghastrum nutans |
| Prairie Cordgrass | Spartina pectinata |
| Prairie Dropseed | Sporobolus heterolepis |
| **Forbs** | |
| Lead Plant | Amorpha canescens |
| Thimble Weed | Anemone cylindrica |
| Sullivant's Milkweed | Asclepias sullivantii |
| Butterfly Weed | Asclepias tuberosa |
| Whorled Milkweed | Asclepias verticillata |
| Short Green Milkweed | Asclepias virdiflora |
| Heath Aster | Aster ericoides |
| Smooth Blue Aster | Aster laevis |
| New England Aster | Aster novae-angeliae |
| White Wild Indigo | Baptisia leucantha |
| Cream Wild Indigo | Baptisia leucophaea |
| Wild Hyacinth | Camassia scilloides |
| New Jersey Tea | Ceanothus americanus |
| Prairie Coreopsis | Coreopsis palmata |
| Showy Tick Trefoil | Desmodium canadense |
| Midland Shooting Star | Dodecatheon meadia |
| Pale Purple Cone Flower | Echinacea pallida |
| Purple Cone Flower | Echinacea Purpurea |
| Rattlesnake Master | Eryngium yuccifolium |
| Flowering Spurge | Euphorbia corollata |

| Species | Scientific Name |
|---|---|
| Oxeye False Sunflower | Heliopsis helianthoides |
| Prairie Alumroot | Heuchera richardsonii |
| Round-headed Bush Clover | Lespedeza capitata |
| Rough Blazing Star | Liatris aspera |
| Prairie Blazing Star | Liatris pycnostachya |
| Marsh Blazing Star | Liatris spicata |
| Michigan Lily | Lilium Michiganense |
| Prairie Lily | Lilium philadelphicum |
| Wild Bergamot | Monarda fistulosa |
| Wild Quinine | Parthenium integrifolium |
| Foxglove Beardtongue | Penstemon digitalis |
| White Prairie Clover | Petalostemum candidum |
| Purple Prairie Clover | Petalostemum purpureum |
| Prairie Phlox | Phlox pilosa |
| Obediant Plant | Physostegia virginiana |
| Prairie Cinquefoil | Potentilla arguta |
| Narrow-Leaved Mountain Mint | Pycanthemum tenufolium |
| Mountain Mint | Pycanthemum virginianum |
| Yellow Cone Flower | Ratibida pinnata |
| Black-eyed Susan | Rudbeckia hirta |
| Rosin Weed | Silphium integrifolium |
| Compass Plant | Silphium laciniatum |
| Cup Plant | Silphium perfoliatum |
| Prairie Dock | Silphium terebinthinaceum |
| Stiff Goldenrod | Solidago rigida |
| Culver's Root | Veronicastrum virginicum |
| Prairie Violet | Viola pedatifida |

# OFFICIAL ESTIMATE
## PRAIRIE RESTORATION, PLANTING NO. 3
## DLA/DNSZ NEW HAVEN DEPOT

| CLASSIFICATION | QTY | UNITS | PRICE | TOTAL |
|---|---|---|---|---|
| ***SITE PREPARATION*** | | | | |
| Open Areas | 79.5 | Acres | $ 350.00 | $ 27,825.00 |
| Ditches | 2800 | Feet | $ 0.50 | $ 1,400.00 |
| ***SEED AND PLANTING*** | | | | |
| Open Areas | 79.5 | Acres | $ 700.00 | $ 55,650.00 |
| Ditches | 2800 | Feet | $ 0.50 | $ 1,400.00 |
| ***MANAGEMENT & MONITORING*** | | | | |
| Year 1 | 79.5 | Acres | $ 50.00 | $ 3,975.00 |
| Year 1 | 25 | Acres | $ 30.00 | $ 750.00 |
| Year 2 | 104 | Acres | $ 100.00 | $ 10,400.00 |
| Year 3 | 104 | Acres | $ 110.00 | $ 11,440.00 |
| Ditches - Year 1 | 2800 | Feet | $ 1.00 | $ 2,800.00 |
| Year 2 | 2800 | Feet | $ 1.05 | $ 2,940.00 |
| Year 3 | 2800 | Feet | $ 1.10 | $ 3,080.00 |
| | | | **Total** | **$ 121,660.00** |

Prepared By: Stephen Kovach Date: 3/12/96

ATTACHMENT 3 cont'd.

# THE PRAIRIES OF INDIANA

Robert F. Betz

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## ABSTRACT

Approximately 15% of Indiana in presettlement times was covered by prairies. Most were found north and west of the Wabash River, while the remainder were scattered throughout the state in small islands, surrounded by forests, principally in the northeast and southwest.

The sand prairies (black oak savannas, wet acid sands, sand prairies and wet alkaline sands) were found chiefly around Lake Michigan and in the Kankakee River region. The black silt-loam prairies (mesic, wet, and alkaline fens) were found mostly south and east of the sand prairies. The rare gravel hill prairies were concentrated mostly on the terraces of the larger rivers.

While a few sand prairie remnants still exist, most of the black silt-loam and gravel hill prairies have been destroyed.

## INTRODUCTION

While the state of Iowa in pre-settlement times is reputed to have had 85% of its surface covered with prairie and 15% with forest (Dick-Peddie 1955), Indiana, by way of contrast, appears to have had 85% of its surface in forest and 15% in prairie. Since the state of Indiana is a little more than 93,240 $km^2$ in size, this would amount to over 12,950 $km^2$ of prairie. However, one should not assume from the relatively small area involved that the Indiana prairies were depauperate in their species composition as compared to the prairie states to the west. On the contrary, with an annual precipitation of well over 89 cm (35 in) per year, a variety of soils, and a variety of plant species drawn from all parts of North America, such as lead plant (Amorpha canescens) and prairie parsley (Polytaenia nuttallii) from the southwestern prairies, and rockroses (Helianthemum sp.) and pin weeds (Lechea sp.) from the Atlantic coastal plain (Peattie 1922), all made the Indiana prairies extremely rich in species. The dune area at the south end of Lake Michigan, with its mosaic of forest, prairie, marsh and bog, is probably one of the richest botanical areas in the entire Middle West.

Unfortunately, very little is known about these prairies. Articles on Indiana prairies are few and usually of a general or theoretical nature (Benninghoff 1963, Finley and Potzger 1951, Rohr and Potzger 1951, Welch 1929). However, a small number of papers are devoted to their species composition and ecology (Bliss and Cox 1964, Friesner and Potzger 1946, Starc 1961). Some ecological information can be found in Peattie's Flora of the Indiana Dunes (1930), Deam's Flora of Indiana (1940) and Swink's Plants of the Chicago Region (1974). Another valuable source of information on these prairies has come from the detailed ecological labels on specimens in the herbarium of the Morton Arboretum, Lisle, Illinois, collected during the past decade by Ray Schulenberg and Gerald Wilhelm, both of the Arboretum.

## GEOGRAPHICAL DISTRIBUTION

Although small islands of prairie were found in almost all counties of northern and western Indiana in pre-settlement times (Deam 1940) it was in the northwestern part of the state that most of the prairies were concentrated:

> With some few exceptions of wide and naked prairie, the divisions of timbered and prairie lands are more happily balanced, than in other parts of the western country. Many rich prairies are long and narrow, so that the whole can be taken up, and yet timber be easily accessible by all settlers. There are hundreds of prairies only large enough for a few farms. Even in the larger prairies there are those beautiful islands of timbered land, which form such a striking feature in western prairies. (Flint 1826).

To early travelers moving westward, the Wabash River was a dividing line between the forests of the east and the prairies of the west. Beyond the river lay the "Grand Prairie" with its "sea of grass", which only here and there was broken by isolated groves of timber and gallery forests along the larger rivers:

> Twenty miles west of the Wabash at this point (near Terre Haute), we met with the first prairie in a state of nature; and from this, extending northward to the Lakes, and westward to the Mississippi, they continue, increasing in magnitude, and interrupted only by occasional groves of timber, so as to occupy by far the largest portion of the central, eastern, western, and northern portions of the State of Illinois (Short 1845).

A study of Transeau's (1935) map (Fig. 1) drawn from data obtained from the distribution of soil types and the field notes of the early surveyors, clearly shows the preponderance of prairie and prairie marsh vegetation in northwestern Indiana. Extending northeastward and eastward in long finger-like projections, the prairie penetrated deep into the forested regions of Indiana. Further eastward this grassy sward, with its groves and savannas, faded into an unbroken forest with isolated patches of prairie all the way to the eastern-most counties of Indiana and beyond into Ohio.

Because of differences in soil type, these Indiana prairies were not all alike. While many similarities existed among them, the sand prairies of Stark and Pulaski counties in the north differed considerably from the black silt-loam prairies of Benton and Warren counties to the south. The pre-settlement prairies in Indiana can be divided into three major types: (1) sand prairies and black oak savannas, (2) black silt-loam prairies, and (3) dry gravel hill prairies.

A study of the physiographic units of Indiana (Fig. 2) clearly shows the peculiar distribution of

Introduce Dr. Holland - MRO USPHS/FOH

Commissioned Review w/ FOH to:

- Review Past Asbestos Records
- Asbestos Storage
- Asbestos Monitoring Results
- DNSC Procedures
- Current Asbestos Related Activities

None in excess of OHSA STD

Asbestos Procedures
Medical Surveillance Program (Asbestos) - Jason

Specific Medical Questions - Dr. Holland

Current Asbestos Activities - 214-1 thru 3
213-2 & 3

- Questions -

Arsenic Information - Arsenic on Dunnage
All less than - Specific Fluorspar Results
< 1 ppm - All Bins Sampled
- No occupational Source -

Other E Projects - Bldg 215 - MARSSIM
- UST @ T118

DEPARTMENT OF HEALTH & HUMAN SERVICES Program Support Center

Federal Occupational Health Service
4550 Montgomery Avenue, Suite 950
Bethesda, Maryland 20814

March 16, 2006

From: Christopher S. Holland, MD, MPH
To: Jason Boynton, DLA

Subj: Arsenic Testing

This letter summarizes the findings concerning bio-monitoring for arsenic during the 2005 occupational examination cycle. As you know, four DLA employees were reported as having elevated total (spot) urine arsenic levels. Unfortunately, the laboratory did not speciate metabolites in urine to isolate the inorganic arsenic component. We are working with Quest to try and automate this follow-up testing in the future. Organic arsenic is not toxic and is commonly found in human urine after shellfish ingestion. (See below.) Historically, this has uniformly explained elevated total arsenic levels in DLA employee specimens. The employees who expressed concern about their levels were: Nikki Horther, Snowden Hensley, Scott Smith, and Richard Whitman.

The results of the additional testing were as follow:

| Name | Initial | Normalized value | blood arsenic | comments |
|---|---|---|---|---|
| Nikki Horther | elevated | elevated | <3 (negative) | N/A |
| Hensley Snowden | normal | Not performed | <3 (negative) | normal |
| Scott Smith | elevated | normal | | normal |
| Richard Whitman | Normal | normal | | normal |

Ms. Horther's elevated spot and normalized value is almost certainly explained by the organic arsenical component in the urine. Since the lab did not speciate into organic and inorganic at the time, and did not retain the specimen, it is impossible to determine with certainty the nature of her elevated value now. Her follow-up blood test for arsenic was, however, negative. My understanding is that there is no basis to think that she was occupationally exposed to excessive elemental arsenic.

As you know, Kevin Riley, Scott Romans and I met with a group of DLA Stockpile employees on 10 March 2006. Although we were speaking to them about a different matter, I had the opportunity to review these results to the group, and then individually to three of the four employees. I answered their questions and they seem reassured. See below for more discussion of the challenges of bio-monitoring for arsenic.

## Discussion: Arsenic and metabolites in urine

Since arsenic is rapidly metabolized and excreted into the urine, total arsenic, inorganic arsenic and the sum of arsenic metabolites (inorganic arsenic + MMA + DMA) in urine have all been used as biomarkers of recent arsenic exposure. In common with other biomarkers of arsenic exposure, levels of arsenicals in urine may be a consequence of inhalation exposure or ingestion of arsenic from drinking-water, beverages, soil or foodstuffs.

Screening urine for total urinary arsenic as a biomarker of recent arsenic exposure is problematical because organic arsenicals present in substantial amounts in certain foodstuffs are also excreted in urine. For example, the practically non-toxic compound arsenobetaine is present in mg/kg levels in seafood and excreted mainly unchanged in the urine. In controlled experiments, it has been found that consumption of seafood (e.g. marine fishes, crustaceans, bivalves, seaweeds) by human volunteers is associated with increased total urinary arsenic excretion. Under these conditions, assessment of inorganic arsenic exposure using total urinary arsenic would result in overestimation of the inorganic arsenic exposure.

To avoid the potential for overestimation of inorganic arsenic exposure inherent in using total urinary arsenic, we would like to speciate metabolites in urine and use either inorganic arsenic or the sum of arsenic metabolites (inorganic arsenic + MMA + DMA) as an index of arsenic exposure. Relatively recently it has been found that adding all arsenic metabolites together can give misleading results unless a careful diet history is taken and/or seafood consumption is prohibited for 2–3 days before urine collection. There are two reasons for this. First, some seafood, especially bivalves, contains the arsenic metabolites MMA and DMA, particularly DMA, in fairly high amounts. Secondly, arsenosugars present in seaweeds and some bivalves are extensively metabolized (either by the body itself or by the gut microbiota) to DMA, which is then excreted in urine. The issue of the extent to which consumption of seafoods and other foods can compromise the estimation of inorganic arsenic exposure by the measurement of arsenic and its metabolites in urine remains an active area of investigation.

# REVIEW OF ASBESTOS MONITORING RESULTS

## AT THE:

## DEFENSE LOGISTICS AGENCY
## DEFENSE NATIONAL STOCKPILE CENTER
## NEW HAVEN DEPOT
## 15411 DAWKINS ROAD
## NEW HAVEN, INDIANA 46774

## CONDUCTED ON:

## JUNE 30, 2005

## PREPARED BY:


## U. S. PUBLIC HEALTH SERVICE
## FEDERAL OCCUPATIONAL HEALTH
## DENVER, COLORADO


## FEBRUARY 2, 2006

## EXECUTIVE SUMMARY

On June 30, 2005, the U. S. Public Health Service, Federal Occupational Health (FOH) conducted a review of past asbestos storage, asbestos monitoring, employee handling procedures of asbestos, and conducted recent area air and surface monitoring for asbestos at the Defense Logistics Agency, New Haven, Indiana depot. The purpose of this study is to assess past employee exposures to asbestos in order to make recommendations for possible future health surveillance of employees who were potentially exposed to asbestos. The OSHA Permissible Exposure Standard for asbestos is the criteria used in this report for making the determination on medical surveillance for the employees.

During the site visit the following tasks were investigated.

1. Six employees were interviewed on their work history and their past handling of asbestos and information was gathered on two absent employees. All but one employee had some contact with asbestos based on their job descriptions during the period of employment at the depot.

2. Records were reviewed concerning the locations and time period of asbestos storage. Asbestos was stored at the depot starting in the 1940s until 1999. In 1986, asbestos stock was re-bagged to prevent spillage.

3. Asbestos monitoring records were reviewed to assess potential exposures. Over 100 personal samples and at least 100 area samples have been collected since monitoring began in 1975. Much of the personal sampling occurred during normal work operations such as inventory counting, dry sweeping, and material staging and loading. All personal sampling results were below the OSHA PEL of 0.10 fibers per cubic centimeter of air as an 8-hour time-weighted average. Likewise, all area monitoring was below the OSHA standard. In addition to the air monitoring, hundreds of surface wipe or surface vacuum samples and bulk samples were collected since 1975. Results varied between buildings and time frames but asbestos fibers have been present throughout most of the depot warehouses on material containers and building surfaces.

4. Area air monitoring and surface wipe samples were collected for asbestos in Building 214. The results of area air monitoring for fibers were 0.004 fibers per cubic centimeter of air in section 1 and less than 0.003 fibers per cubic centimeter of air in section 2. Both samples were below 0.01 asbestos fibers per cubic centimeter of air. Two of the nine surface vacuum samples did contain traces of chrysotile asbestos. A small piece of fibrous material was observed on a wooden box containing iodine and sampled for asbestos. The laboratory reported the sample contained 60 to 70 percent amosite asbestos. Amosite was stored in the building at one time and then removed.

In conclusion, employee exposure levels to asbestos before 1975 is unknown. Since 1975, monitoring results indicate that most employees at the depot who worked in the warehouses were exposed to airborne asbestos at levels below the OSHA Permissible Exposure Limit.

While air monitoring suggests asbestos levels did not exceed OSHA PEL, the level of asbestos exposure prior to the 1975 agency monitoring efforts is unclear. Because of this uncertainty, it might be prudent to continue to enroll employees, at risk for asbestos exposure prior to 1975, into a medical monitoring program to better determine if there are any medical findings consistent with past asbestos exposure. At minimum this monitoring would include; a medical/exposure history, medical examination, spirometry, and chest x-ray. Based on the initial analysis of these medical evaluations, a determination could be made regarding any evidence of asbestos-related disease of the need for continued monitoring over the next few years.

## INTRODUCTION

The U. S. Public Health Service, Federal Occupational Health (FOH) conducted a review of past asbestos storage, asbestos monitoring, employee handling procedures of asbestos, and conducted recent area air and surface monitoring for asbestos at the Defense Logistics Agency, Defense National Stockpile Center, 15411 Dawkins Road, in New Haven, Indiana. The site visit was conducted on June 30, 2005 by Captain Bruce Hills, CIH. The purpose of this study is to assess past employee exposures to asbestos in order to make recommendations for possible future health surveillance of potentially exposed employees. The DLA point of contact at the New Haven Depot was Mr. Charles (Cam) Delhoste, Environmental Protection Specialist.

## EMPLOYEE INTERVIEWS

Six current employees were interviewed during the site visit and information on two employees who were absent was collected. Job titles include Quality Assurance Specialist, Material Handler, and Engineering Equipment Operator. Tasks include checking inventory, staging and loading materials, and cleaning with an electric sweeper. All employees were aware of the asbestos stock onsite and reported seeing asbestos material on the floor and on container surfaces in the past. In 1986 and 1987, two employees worked on the re-bagging of the asbestos. The re-bagging was performed in Building 211 and at the Marion, Ohio depot inside containment with protective clothing and respirators. One employee stated that respirators were not worn in the 1970s around asbestos. Most of the employees were smokers at one time.

## HISTORY OF ASBESTOS STORAGE

The New Haven depot was opened in the 1940s and asbestos may have been stored at that time. It is clear that there was asbestos storage in the 1970s.

On May 21, 1998, FOH conducted an industrial hygiene evaluation at the New Haven Depot. Material inventory records provided to the FOH Industrial Hygienist showed that amosite and chrysotile asbestos were stored in Building 211, Section 3; Building 212, Sections 1 & 2; Building 213, Sections 2 & 3; and Building 214, Section 1. In Building 214 asbestos was stored in Sections 1 and 2. No asbestos was stored in Sections 3 and 4. Asbestos was removed from Section 2 in October 1999. Section 1 is scheduled to be decontaminated of asbestos. Each section of the building is 42,300 square feet. It is possible that asbestos may have been stored in other buildings on the site as well.

In 1999, the asbestos was moved from Building 214 to Building 211 where re-bagging of the asbestos occurred.

In addition to the stored asbestos stock, at least 15 buildings at the depot contained asbestos containing building materials (ACBM). A review of the condition of ACBM by a FOH Industrial Hygienist in 2002 found most of the ACBM to be in good condition. Three locations had ACBM in fair condition with either low or medium potential for disturbance. One location in Building T-124 had ACBM insulation in the boiler room that was in poor condition and a medium potential for being disturbed.

## ASBESTOS MONITORING RECORDS

A review of the available asbestos monitoring records for the New Haven depot was made. Personal and area air monitoring was started in 1975 and has been continued to present. Over 100 personal samples and at least 100 area samples have been collected since monitoring began. Some of the results are reported as fibers per cubic centimeter of air for short-term exposures, other results are reported as adjusted 8-hour time-weighted averages. Much of the personal sampling occurred during normal work operations such as inventory counting, dry sweeping, material staging and loading. All personal sampling results were below the OSHA Permissible Exposure Limit of 0.10 fibers per cubic centimeter as an 8-hour time-weighted average. Likewise, all area monitoring was below the OSHA standard.

In addition to the air monitoring, hundreds of surface wipe or surface vacuum samples and bulk samples were collected since 1975. Results varied between buildings and time frames but asbestos fibers have been present throughout most of the depot warehouses on material containers and building surfaces.

## SAMPLING AND ANAYLTICAL METHODS

Two area samples for airborne fibers were collected in Building 214. One sample was collected for 418 minutes in section 1 and another sample was collected in section 2 for 395 minutes. Both samples were collected on 25 mm mixed cellulose ester filters in a cassette, pore size 0.8 um. The cassette was attached to a battery powered pump that was calibrated at a flow rate of 3 liters per minute. The building was unoccupied during sampling but the strong wind from the open door may have created some airborne dust and fibers. The sample cassettes were analyzed by the FOH asbestos laboratory in Denver, CO according to NIOSH Analytical Method 7400A.

Nine surface vacuum samples were collected in Building 214 on 25 mm mixed cellulose ester filters with a battery powered pump in order to detect possible

asbestos surface contamination. Samples were collected from the floor, wooden pallets, wooden boxes, metal drums, and from column posts. All surface vacuum sample cassettes were sent to the FOH asbestos laboratory for analysis by polarized-light microscopy (PLM) according to EPA Method for the Determination of Asbestos in Bulk Building Materials (EPA-600/R-93-116).

One bulk sample of debris that looked like asbestos was collected from the top of a wooden box containing iodine. The sample was analyzed by PLM.

## EVALUATION CRITERIA

OSHA requires that no employee shall be exposed to airborne concentrations of asbestos in excess of 0.1 fibers per cubic centimeter of air as an eight (8)-hour time-weighted average. OSHA also has an Excursion Limit for asbestos of 1.0 fiber per cubic centimeter of air as averaged over a sampling period of 30 minutes.

## RESULTS

June 30, 2005 Monitoring Results

The results of area air monitoring for fibers were 0.004 fibers per cubic centimeter of air in section 1 and less than 0.003 fibers per cubic centimeter of air in section 2 (Table 1). It should be noted that the fibers detected in the sampling/analysis may not be asbestos fibers but any structure with a length equal to or greater than 0.5 um and an aspect ratio of equal to or greater than 5 to 1 in length. Also, the area monitoring results are in an unoccupied building and can not be inferred as a personal exposure level to asbestos.

Two of the nine surface vacuum samples contained traces of chrysolite asbestos (Table 2). Other materials detected in the samples included; cellulose fibers, silt, clay, non-fibrous glass, calcite, quartz, and talc.

A small piece of fibrous material was observed on a wooden box containing iodine and sampled for asbestos. The laboratory reported the sample to contain 60 to 70 percent amosite asbestos (Table 3). Amosite was stored in the building at one time, and then removed.

Defense Logistics Agency Monitoring Results

Over 100 personal samples and at least 100 area samples have been collected since monitoring began in 1975. Some of the results are reported as fibers per cubic centimeter of air for short-term exposures, other results are reported as adjusted 8-hour time-weighted averages. Much of the personal sampling occurred during normal work operations such as inventory counting, dry sweeping, material staging and loading. All personal sampling results were

below the OSHA Permissible Exposure Limit of 0.10 fibers per cubic centimeter as an 8-hour time-weighted average. Likewise, all area monitoring was below the OSHA standard.

In addition to the air monitoring, hundreds of surface wipe or surface vacuum samples and bulk samples were collected since 1975. Results varied between buildings and time frames but asbestos fibers have been present throughout most of the depot warehouses on material containers and building surfaces.

All bulk asbestos material was removed from the site in 1999. However, some asbestos debris can be found in Building 214 and it is possible that traces of asbestos may be present on some material containers at the depot.

## CONCLUSIONS

Asbestos debris has been present throughout much of the depot for at least 40 years on warehouse surfaces and on material containers. Potential exposures to asbestos could have occurred directly from the asbestos stock pile especially if the containers were damaged and disturbed by wind, dry sweeping, or forklift traffic. Another source of asbestos could have occurred from other material containers and the wooden pallets. These other containers may have been contaminated onsite or at another depot location and transported to the New Haven Depot. With the multiple transfers of materials in and out of the depots it is not possible to trace the asbestos contamination to the original source with any accuracy. In any case, the staging and loading of material containers, that were contaminated, would have been a potential source of exposure to asbestos.

The last of the asbestos stock was removed in 1999 and warehouses have been decontaminated during the last 10 years. The wearing of respirators has also reduced exposure to asbestos fibers.

During the past 40 years, employees working in the warehouses were exposed to low levels of asbestos fibers. The monitoring records do not show any cases where an employee had an asbestos exposure in excess of the OSHA Permissible Exposure Level of 0.1 fibers per cubic centimeter of air over an 8-hour TWA. If employees were wearing a respirator during material handling, their exposure to airborne asbestos should have been greatly reduced.

## RECOMMENDATIONS

1. Building 214, Section 1, and any other contaminated buildings, should be cleaned to remove remaining asbestos.

2. Employees should continue to wear respirators in buildings known to contain asbestos debris.

3. While air monitoring suggests asbestos levels did not exceed OSHA PEL, the level of asbestos exposure prior to the 1975 agency monitoring efforts is unclear. Because of this uncertainty, it might be prudent to continue to enroll employees, at risk for asbestos exposure prior to 1975, into a medical monitoring program to better determine if there are any medical findings consistent with past asbestos exposure. At minimum this monitoring would include; a medical/exposure history, medical examination, spirometry, and chest x-ray. Based on the initial analysis of these medical evaluations, a determination could be made regarding any evidence of asbestos-related disease of the need for continued monitoring over the next few years.

Table 1
Area Asbestos Air Monitoring Results
Building 214
New Haven Depot
June 30, 2005

| Sample Number | Sample Location | Time Sampled in Minutes | Liters of Air Sampled | Fibers per cc |
|---|---|---|---|---|
| 1 | Section 1 | 418 | 1254 | 0.004 |
| 2 | Section 2 | 395 | 1185 | 0.003 |

Table 2
Surface Vacuum Sampling for Asbestos
Building 214
New Haven Depot
June 30, 2005

| Sample Number | Sample Location | Surface | Mineral Fiber | Total % Asbestos |
|---|---|---|---|---|
| 1-W | Section 1 Area 54 | Iodine box | None Detected | 0 |
| 2-W | Section 1 Area 48 | Cobalt drum | None Detected | 0 |
| 3-W | Section 2 Area 22 | | None Detected | 0 |
| 4-W | Section 2 Area 48 | Wooden pallet | None Detected | 0 |
| 5-W | Section 2 Area 75 | Wooden pallet | Chrysotile | <1 |
| 6-W | Section 2 Area 68 | Floor | None Detected | 0 |
| 7-W | Section 2 | Floor | Chrysotile | <1 |
| 8-W | Section 3 Area 45 | Drum | None Detected | 0 |
| 9-W | Section 3 Area 67 | Post | None Detected | 0 |

Table 3
Bulk Sample Analysis for Asbestos
Building 214
New Haven Depot
June 30, 2005

| Sample Number | Location | Surface | Mineral Fiber | Total % Asbestos |
|---|---|---|---|---|
| 1-B | Section 1 Area 54 | Iodine box | Amosite | 60 – 70 |

July 12, 2005

LGN B0587700

Bruce Hills, CIH
Federal Occupational Health
Building 41, Room 190, DFC
Denver, CO 80225-0145

Dear Mr. Hills:

Enclosed are the results of the analysis of 1 bulk material from Department of Defense asbestos review, submitted to the Division of Federal Occupational Health (DFOH) National Environmental Reference Laboratory (NERL) Asbestos/Fine Particle Analytical Division in Denver, Colorado, for asbestos analysis. The sample was received at NERL on July 6, 2005. The methods used for this evaluation involve stereo- and polarized-light microscopy (PLM) in compliance with guidelines established by EPA in its Method For The Determination Of Asbestos In Bulk Building Materials (EPA-600/R-93-116). The DFOH laboratory services are currently accredited for bulk asbestos analysis by the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute of Standards and Technology (NIST). This report may not be used to claim product endorsement by NVLAP or other U.S. Government agency. The report may not be reproduced except in full, without the written approval of the NERL. **The NERL NVLAP laboratory code number is 101593-0.**

The results given, which pertain only to the materials submitted for testing, are listed in Table 1. Details of this report will not be issued to any person or agency not associated with you or the DOD. The EPA method guidelines were developed for use in evaluating friable materials. Point-count reanalysis of materials is recommended to confirm trace or low-percentage PLM results. If you have questions regarding the content of this report, analytical procedures or methods, asbestos evaluation or abatement, please contact NERL directly at (303) 236-3455 ext 603.

ANALYST LABORATORY DIRECTOR

Mark A. Steiner, MS Debra Flagg, MS, IH

GEOLOGIST/MICROSCOPIST CHIEF OF OPERATIONS

**TABLE 1**

**DIVISION OF FEDERAL OCCUPATIONAL HEALTH**

**NERL/AFPAD POLARIZED LIGHT MICROSCOPY (PLM) BRANCH**

**LGN: B0587718**

**PROJECT I.D.: Department of Defense Asbestos Review**

**REPORT DATE: July 11, 2005**

**NVLAP LAB CODE: 101593-0**

| SAMPLE NUMBER | ASBESTOS PRESENT? | Estimated % Composition---------- ASBESTIFORM MINERAL FIBERS | OTHER CONSTITUENTS | FIBROUS TOTAL % ASBESTOS |
|---|---|---|---|---|
| **1-B:** | **Yes** | | | |
| **Insulation:** light gray, homogeneous, friable, fibrous | | **Amosite 60-70** | Cellulose | 10 60-70 |

**END OF DOCUMENT**

July 13, 2005

LGN B0587719

Bruce Hills, CIH

Federal Occupational Health
Building 41, Room 190, DFC
Denver, CO 80225-0145

Dear Mr. Hills:

Enclosed are the results of the analysis of 10 MCE wipe samples from Department of Defense asbestos review, submitted to the Division of Federal Occupational Health (DFOH) National Environmental Reference Laboratory (NERL) Asbestos/Fine Particle Analytical Division in Denver, Colorado, for constituent analysis. The samples were received at NERL on July 6, 2005. The methods used for this evaluation involve stereo- and polarized-light microscopy (PLM) in compliance with guidelines established by EPA in its Method For The Determination Of Asbestos In Bulk Building Materials (EPA-600/R-93-116). The procedures outlined in the Method were extended to apply to the particulate constituents submitted for analysis. Due to variable particulate loading, both fibrous and non-fibrous materials submitted for analysis are listed in descending order of abundance. The DFOH laboratory services are currently accredited for bulk asbestos analysis by the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute of Standards and Technology (NIST). This report may not be used to claim product endorsement by NVLAP or other U.S. Government agency. The report contains data that are not covered under the NVLAP accreditation. **The NERL NVLAP laboratory code number is 101593-0.**

The results given, which pertain only to the materials submitted for testing, are listed in Table 1. Details of this report will not be issued to any person or agency not associated with you or the DOD. The EPA method guidelines were developed for use in evaluating friable materials. If you have questions regarding the content of this report, analytical procedures or methods, asbestos evaluation or abatement, please contact DFOH at(303) 236-3455 ext. 500, or NERL directly at (303) 236-3455 ext. 603.

ANALYST LABORATORY
DIRECTOR

Mark A. Steiner, MS
Geologist/Microscopist

CDR Debra Flagg, MS, IH
Chief of Operations

TABLE 1

DIVISION OF FEDERAL OCCUPATIONAL HEALTH

NERL/AFPAD POLARIZED LIGHT MICROSCOPY (PLM) BRANCH

LGN: B0587719

PROJECT I.D.: MCE Wipe/PLM Dust Sampling
Department of Defense
Asbestos Review

REPORT DATE: July 12, 2005

NVLAP LAB CODE: 101593-0

| SAMPLE NUMBER | SAMPLE TYPE | SAMPLE LOCATION | ASBESTOS PRESENT? | ASBESTIFORM MINERAL FIBERS | ESTIMATED % COMPOSITION | |
|---|---|---|---|---|---|---|
| | | | | | TOTAL % ASBESTOS | OTHER CONSTITUENTS |
| 1-W | MCE Wipe | Not given | No | None Detected | 0 | Nonmetallic opaque<br>Fine silt & clay<br>Nonfibrous glass<br>Calcite<br>Quartz |
| 2-W | MCE Wipe | Not given | No | None Detected | 0 | Nonmetallic opaque<br>Fine silt & clay<br>Nonfibrous glass<br>Calcite<br>Quartz |
| 3-W | MCE Wipe | Not given | No | None Detected | 0 | Cellulose fibers<br>Fibrous glass<br>Nonmetallic opaque<br>Fine silt & clay<br>Nonfibrous glass<br>Calcite<br>Quartz |
| 4-W | MCE Wipe | Not given | No | None Detected | 0 | Cellulose fibers<br>Nonmetallic opaque<br>Fine silt & clay |

| SAMPLE NUMBER | SAMPLE TYPE | SAMPLE LOCATION | ASBESTOS PRESENT? | ASBESTIFORM MINERAL FIBERS | ESTIMATED % COMPOSITION | |
|---|---|---|---|---|---|---|
| | | | | | TOTAL % ASBESTOS | OTHER CONSTITUENTS |
| | | | | | | Nonfibrous glass<br>Calcite<br>Quartz |
| | | | | | | |

TABLE 1

PAGE 2

| SAMPLE NUMBER | SAMPLE TYPE | SAMPLE LOCATION | ASBESTOS PRESENT? | ASBESTIFORM MINERAL FIBERS | MATERIAL SPECIES PRESENT | |
|---|---|---|---|---|---|---|
| | | | | | TOTAL % ASBESTOS | OTHER CONSTITUENTS |
| 5-W | MCE Wipe | Not given | Yes | Chrysotile | <1 | Cellulose fibers<br>Nonmetallic opaque<br>Fine silt & clay<br>Nonfibrous glass<br>Calcite<br>Quartz |
| 6-W | MCE Wipe | Not given | No | None Detected | 0 | Cellulose fibers<br>Nonmetallic opaque<br>Fine silt & clay<br>Nonfibrous glass<br>Calcite<br>Quartz |
| 7-W | MCE Wipe | Not given | Yes | Chrysotile | <1 | Cellulose fibers<br>Nonmetallic opaque<br>Fine silt & clay<br>Nonfibrous glass<br>Calcite<br>Quartz |
| 8-W | MCE Wipe | Not given | No | None Detected | 0 | Cellulose fibers<br>Nonmetallic opaque<br>Fine silt & clay<br>Nonfibrous glass<br>Talc<br>Calcite<br>Quartz |
| 9-W | MCE Wipe | Not given | No | None Detected | 0 | Cellulose fibers<br>Nonmetallic opaque<br>Fine silt & clay<br>Nonfibrous glass<br>Talc<br>Calcite<br>Quartz |
| Blank | MCE | Field | No | None | 0 | Trace cellulose |

| SAMPLE NUMBER | SAMPLE TYPE | SAMPLE LOCATION | ASBESTOS PRESENT? | ASBESTIFORM MINERAL FIBERS | MATERIAL SPECIES PRESENT | |
|---|---|---|---|---|---|---|
| | | | | | TOTAL % ASBESTOS | OTHER CONSTITUENTS |
| | Blank | Blank | | Detected | | |
| NOTE: Very light particulate loading on samples 1-W and 6-W. | | | | | | |

July 12, 2005

LGN P0582987

Bruce Hills, CIH
Federal Occupational Health
Building 41, Room 190, DFC
Denver, CO 80225-0145

Dear Mr. Hills:

Attached are the results of the analysis of 3 airborne samples from Department of Defense asbestos review, submitted to the Division of Federal Occupational Health (DFOH) National Environmental Reference Laboratory (NERL) in Denver, Colorado. These samples were received at this facility on July 6, 2005, and were analyzed in accordance with the National Institute for Occupational Safety and Health (NIOSH) 7400A analytical protocol (Version #4, 9/15/94). Results of these evaluations are listed in Table 1. Procedures for this analysis involve mounting a section of a mixed-cellulose ester (MCE) filter membrane onto a glass slide. The filter section is then dissolved through acetone vaporization and fixed with reagent triacetin and a glass cover slip. This process permits transparency of the filter medium through which collected material can be examined under a light microscope. Particulate matter and fibers collected are then sized and counted under phase contrast microscopy (PCM). A final airborne fiber concentration is then calculated for this evaluation and appropriate sample volume data. In accordance with NIOSH 7400 Method rules, fibers, for counting purposes, are classified as particulate matter, which has a length-to-

width aspect ratio of at least 3 to 1. A minimum count of 7 fibers per square millimeter is used as the limit of detection. Fiber counting is performed at 400X with a special phase attachment for PCM.

If you have questions about the enclosed results, asbestos identification, evaluation and abatement, please contact the laboratory director's office at (303) 236-3455 ext. 500, or NERL directly at (303) 236-3455 ext 603. If DFOH can be of additional assistance in the field of occupational safety and health, please let us know.

| ANALYST | LABORATORY DIRECTOR |
|---|---|
| MARK A. STEINER, MS<br>Geologist/Microscopist | DEBRA FLAGG, MS, IH<br>Chief of Operations |

**TABLE 1**

**AIRBORNE FIBER COUNT/NIOSH 7400 ANALYSIS**

**DIVISION OF FEDERAL OCCUPATIONAL HEALTH**

**PROJECT TITLE: Asbestos Air Sampling**

**SAMPLING SITE: Department of Defense Asbestos Review**

**REPORT DATE: July 12, 2005**

**PCM LGN P0582987**

| AGENCY I.D. | LOCATION | VOL (L) | FIBER COUNT | FIELD COUNT | *FIBER DENSITY | **FIBERS PER CC |
|---|---|---|---|---|---|---|
| **1** | NOT GIVEN | 1257 | 10 | 100 | 12.7 | 0.004 |
| **2** | NOT GIVEN | 1185 | 5 | 100 | 7 | <0.003 |
| **Blank** | BLANK | ---- | 0 | 100 | 0 | ----- |

* FIBER DENSITY IS ROUNDED TO THE NEAREST FIRST DECIMAL PLACE: F/mm².

** IF E=((FIBERS/FIELDS)-(BLANK FIBERS/BLANK FIELDS))/0.00785 IS LESS THAN 7 FIBERS/mm² (LOD), IT IS SET TO 7 FOR THE CALCULATION OF C=(E*385)/(VOL*1000) AND A LESS-THAN SIGN (<) IS PLACED IN FRONT OF THE RESULT. THE RESULT IS THEN ROUNDED.

**AIHA Lab ID 101543.**

Comments:

New Haven Asbestos Decontamination and MNO2 cleaning and over packaging.

Due to availability of "clean space" at the New Haven depot we need to expand our original proposed contract to include some additional decontamination, cleaning and encapsulating to resolve some space issues and consolidate our remaining operation into one warehouse. Therefore, under advise of contracting, we need to formulate a single contract to address our concerns rather than modify our existing contract, since we know of our new requirements and the original contract has not been finalized. In order to accomplish this work some of the processes must be completed in the proper sequence in order to accept cleaned and relocated material.

WHSE 214-3 – This section is completely vacant and has been partially cleaned. The contractor will need to start here first and clean, decontaminate and apply an asbestos bridging encapsulant and perform aggressive air monitoring for clearance of this entire warehouse section (42,500 square feet).

WHSE214-2 – This section is nearly vacant but will require a small amount of tungsten metal powders and metal ( tons/containers) to be inspected, cleaned and vacuumed and relocated to the now clean WHSE 214-3. Once all the material is cleaned and relocated WHSE 214-2 (42,500 square feet) shall be cleaned, vacuumed and floor encapsulated and aggressive air monitoring performed to open this entire area for unrestricted use.

Once WHSE 214 sections 2 and 3 have been cleaned and cleared the contractor will proceed to WHSE 213-1. All MnO2 in section WHSE 213-1 shall be relocated to section 2 prior to cleaning and over packaging to keep all the major "asbestos" work contained within WHSE213 section 2. All MnO2 now in section 2 will be cleaned, vacuumed, encapsulated and over packaged as in original SOW and relocated to WHSE 214-section1-3 at the direction of the COR. Once all work has been completed and all the MnO2 has been relocated to WHSE 214 the entire section (WHSE 213-2) will be cleaned and vacuumed relocation has been accomplished dated to WHSE 214 sections 1-3, the entire warehouse section WHSE 213-2 (42,500 square feet) shall be cleaned, vacuumed. and aggressive sampling performed and results documented. WHSE 213-2 and 3 will be closed and sealed by DNSC depot personnel and appropriate signs put on doors that entrance into these sections is limited to authorized personnel.

Accept 1/27/06

Note per M/Th 1/26/06

encapsulant vs Mastic M

# Arsenic Compounds

## ARSENIC COMPOUNDS(A)

**107-02-8**

## Hazard Summary-Created in April 1992; Revised in January 2000

Arsenic, a naturally occurring element, is found throughout the environment; for most people, food is the major source of exposure. Acute (short-term) high-level inhalation exposure to arsenic dust or fumes has resulted in gastrointestinal effects (nausea, diarrhea, abdominal pain); central and peripheral nervous system disorders have occurred in workers acutely exposed to inorganic arsenic. Chronic (long-term) inhalation exposure to inorganic arsenic in humans is associated with irritation of the skin and mucous membranes. Chronic oral exposure has resulted in gastrointestinal effects, anemia, peripheral neuropathy, skin lesions, hyperpigmentation, and liver or kidney damage in humans. Inorganic arsenic exposure in humans, by the inhalation route, has been shown to be strongly associated with lung cancer, while ingestion of inorganic arsenic in humans has been linked to a form of skin cancer and also to bladder, liver, and lung cancer. EPA has classified inorganic arsenic as a Group A, human carcinogen.

Arsine is a gas consisting of arsenic and hydrogen. It is extremely toxic to humans, with headaches, vomiting, and abdominal pains occurring within a few hours of exposure. EPA has not classified arsine for carcinogenicity.

Please Note: The main sources of information for this fact sheet are EPA's Integrated Risk Information System (IRIS), which contains information on inhalation chronic toxicity and the RfC for arsine, oral chronic toxicity and the RfD for inorganic arsenic, and the carcinogenic effects of inorganic arsenic including the unit cancer risk for inhalation exposure, and the Agency for Toxic Substances and Disease Registry's (ATSDR's) *Toxicological Profile for Arsenic*.

## Uses

- The major use for inorganic arsenic is in wood preservation; arsine is used in the microelectronics industry and in semiconductor manufacture. (2)
- Until the 1940s, inorganic arsenic solutions were widely used in the treatment of various diseases, such as syphillis and psoriasis. Inorganic arsenic is still used as an antiparasitic agent in veterinary medicine and in homeopathic and folk remedies in the United States and other countries. (2)

## Sources and Potential Exposure

- Inorganic arsenic is found throughout the environment; it is released into the air by volcanoes, the

weathering of arsenic-containing minerals and ores, and by commercial or industrial processes. (1,2)
- For most people, food is the largest source of arsenic exposure (about 25 to 50 micrograms per day [µg/d]), with lower amounts coming from drinking water and air. Among foods, some of the highest levels are found in fish and shelfish; however, this arsenic exists primarily as organic compounds, which are essentially nontoxic. (1)
- Elevated levels of inorganic arsenic may be present in soil, either from natural mineral deposits or contamination from human activities, which may lead to dermal or ingestion exposure. (1)
- Workers in metal smelters and nearby residents may be exposed to above-average inorganic arsenic levels from arsenic released into the air. (1)
- Other sources of inorganic arsenic exposure include burning plywood treated with an arsenic wood preservative or dermal contact with wood treated with arsenic. (2)
- Most arsenic poisoning incidents in industry have involved the production of arsine, a short-lived, extremely toxic gas. (3)

## Assessing Personal Exposure

- Measurement of inorganic arsenic in the urine is the best way to determine recent exposure (within the last 1 to 2 days), while measuring inorganic arsenic in hair or fingernails may be used to detect high-level exposures that occurred over the past 6-12 months. (1)

## Health Hazard Information

***Acute Effects:***

**Inorganic Arsenic**

- Acute inhalation exposure of workers to high levels of arsenic dusts or fumes has resulted in gastrointestinal effects (nausea, diarrhea, abdominal pain), while acute exposure of workers to inorganic arsenic has also resulted in central and peripheral nervous system disorders. (1)
- Acute oral exposure to inorganic arsenic, at doses of approximately 600 micrograms per kilogram body weight per day (µg/kg/d) or higher in humans, has resulted in death. Oral exposure to lower levels of inorganic arsenic has resulted in effects on the gastrointestinal tract (nausea, vomiting), central nervous system (CNS) (headaches, weakness, delirium), cardiovascular system (hypotension, shock), liver, kidney, and blood (anemia, leukopenia). (1,2)
- Acute animal tests in rats and mice have shown inorganic arsenic to have moderate to high acute toxicity. (5)

**Arsine**

- Acute inhalation exposure to arsine by humans has resulted in death; it has been reported that a half-hour exposure to 25 to 50 parts per million (ppm) can be lethal. (4)
- The major effects from acute arsine exposure in humans include headaches, vomiting, abdominal pains, hemolytic anemia, hemoglobinuria, and jaundice; these effects can lead to kidney failure. (4,8)
- Arsine has been shown to have extreme acute toxicity from acute animal tests. (5)

***Chronic Effects (Noncancer):***

**Inorganic arsenic**

- Chronic inhalation exposure to inorganic arsenic in humans is associated with irritation of the skin and mucous membranes (dermatitis, conjunctivitis, pharyngitis, and rhinitis). (1,2)
- Chronic oral exposure to inorganic arsenic in humans has resulted in gastrointestinal effects, anemia, peripheral neuropathy, skin lesions, hyperpigmentation, gangrene of

the extremities, vascular lesions, and liver or kidney damage. (1,2)
- No chronic inhalation exposure studies have been performed in animals for any inorganic arsenic compound. (1)
- Some studies have suggested that inorganic arsenic is an essential dietary nutrient in goats, chicks, and rats. However, no comparable data are available for humans. EPA has concluded that essentiality, although not rigorously established, is plausible. (1,6)
- EPA has not established a Reference Concentration (RfC) for inorganic arsenic. (6)
- The California Environmental Protection Agency (CalEPA) has established a chronic inhalation reference level of 0.00003 milligrams per cubic meter ($mg/m^3$) based on developmental effects in mice. The CalEPA reference exposure level is a concentration at or below which adverse health effects are not likely to occur. It is not a direct estimator of risk, but rather a reference point to gauge the potential effects. At lifetime exposures increasingly greater than the reference exposure level, the potential for adverse health effects increases. (7)
- The Reference Dose (RfD) for inorganic arsenic is 0.0003 milligrams per kilogram body weight per day (mg/kg/d) based on hyperpigmentation, keratosis, and possible vascular complications in humans. The RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without appreciable risk of deleterious noncancer effects during a lifetime. (6)
- EPA has medium confidence in the study on which the RfD for inorganic arsenic was based because, although an extremely large number of people were included in the assessment (>40,000), the doses were not well characterized and other contaminants were present. The supporting human toxicity database, while extensive, is somewhat flawed and, consequently, EPA has assigned medium confidence to the RfD. (6)

**Arsine**

- No information is available on the chronic effects of arsine in humans.
- The RfC for arsine is 0.00005 $mg/m^3$ based on increased hemolysis, abnormal red blood cell morphology, and increased spleen weight in rats, mice, and hamsters. (4)
- EPA has medium confidence in the RfC based on: (1) high confidence in the studies on which the RfC for arsine was based because the sample sizes were adequate, statistical significance was reported, concentration dose-response relationships were documented, three species were investigated, and both a no-observed-adverse-effect level (NOAEL) and a lowest-observed-adverse-effect level (LOAEL) were identified, and (2) medium confidence in the database because while there were three inhalation animal studies and a developmental/reproductive study, there were no data available on human exposure. (4)

***Reproductive/Developmental Effects:***

**Inorganic arsenic**

- Several studies have suggested that women who work in, or live near, metal smelters may have higher than normal spontaneous abortion rates, and their children may exhibit lower than normal birthweights. However, these studies are limited because they were designed to evaluate the effects of smelter pollutants in general, and are not specific for inorganic arsenic. (1)
- Ingested inorganic arsenic can cross the placenta in humans, exposing the fetus to the chemical. (2)
- Oral animal studies have reported inorganic arsenic at very high doses to be fetotoxic and to cause birth defects. (1)

**Arsine**

- Human studies have indicated higher than expected spontaneous abortion rates in women in the microelectronics industry who were exposed to arsine. However, these

studies have several limitations, including small sample size and exposure to other chemicals in addition to arsine. (4)

***Cancer Risk:***

**Inorganic arsenic**

- Human, inhalation studies have reported inorganic arsenic exposure to be strongly associated with lung cancer. (1,2,6)
- Ingestion of inorganic arsenic in humans has been associated with an increased risk of nonmelanoma skin cancer and also to an increased risk of bladder, liver, and lung cancer. (1,6)
- Animal studies have not associated inorganic arsenic exposure via the oral route with cancer, and no cancer inhalation studies have been performed in animals for inorganic arsenic. (1)
- EPA has classified inorganic arsenic as a Group A, human carcinogen. (6)
- EPA used a mathematical model, using data from an occupational study of arsenic-exposed copper smelter workers, to estimate the probability of a person developing cancer from continuously breathing air containing a specified concentration of inorganic arsenic. EPA calculated an inhalation unit risk estimate of $4.3 \times 10^{-3} (\mu g/m^3)^{-1}$. EPA estimates that, if an individual were to continuously breathe air containing inorganic arsenic at an average of 0.0002 $\mu g/m^3$ ($2 \times 10^{-7}$ $mg/m^3$) over his or her entire lifetime, that person would theoretically have no more than a one-in-a-million increased chance of developing cancer as a direct result of breathing air containing this chemical. Similarly, EPA estimates that continuously breathing air containing 0.002 $\mu g/m^3$ ($2 \times 10^{-6}$ $mg/m^3$) would result in not greater than a one-in-a-hundred thousand increased chance of developing cancer, and air containing 0.02 $\mu g/m^3$ ($2 \times 10^{-5}$ $mg/m^3$) would result in not greater than a one-in-ten thousand increased chance of developing cancer. For a detailed discussion of confidence in the potency estimates, please see IRIS. (6)
- EPA has calculated an oral cancer slope factor of 1.5 $(mg/kg/d)^{-1}$ for inorganic arsenic. (6)

**Arsine**

- No cancer inhalation studies in humans or animals are available for arsine. (1)
- EPA has not classified arsine for carcinogenicity. (4)

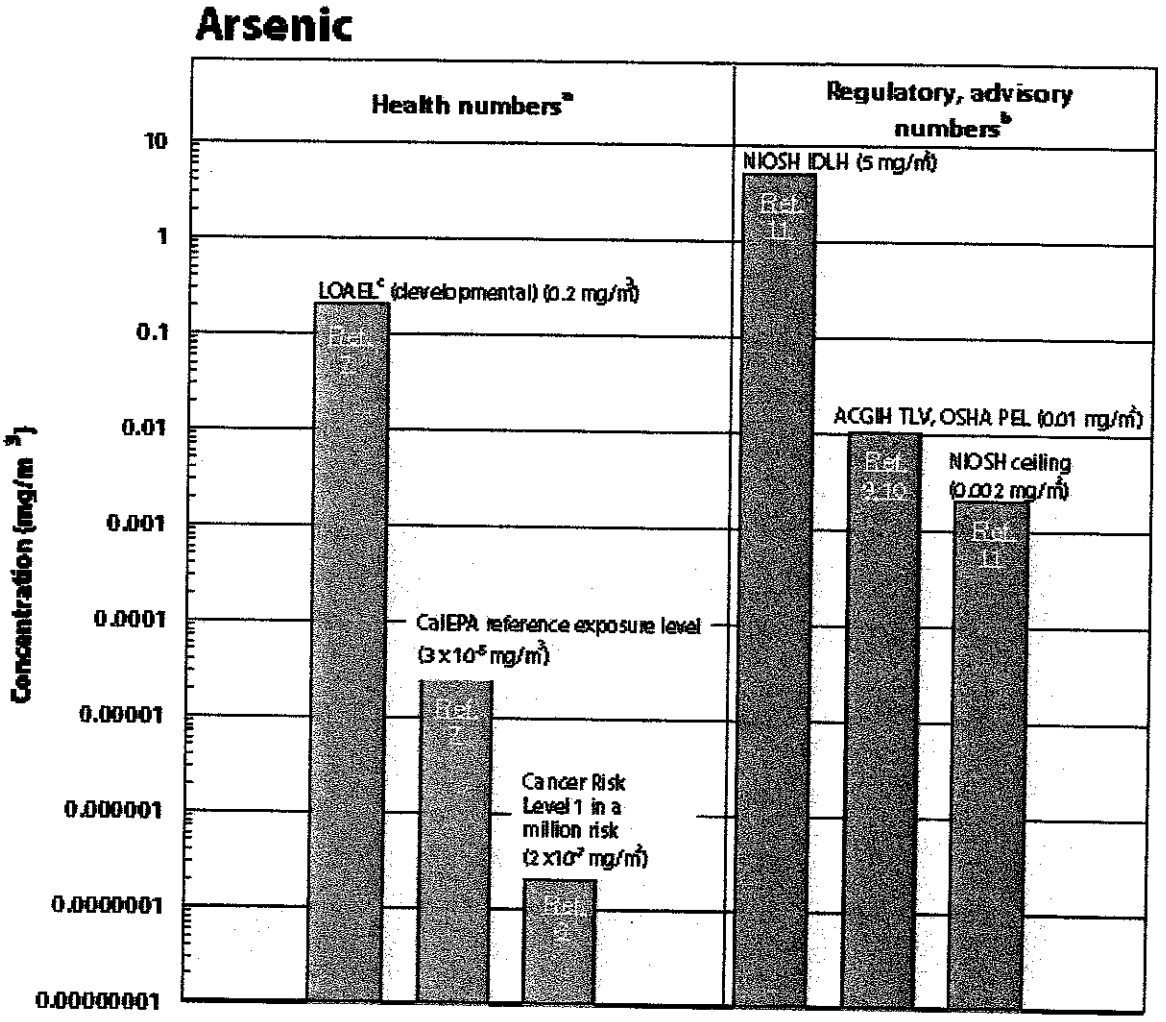
## Physical Properties

- Inorganic arsenic is a naturally occurring element in the earth's crust.(1)
- Pure inorganic arsenic is a gray-colored metal, but inorganic arsenic is usually found combined with other elements such as oxygen, chlorine, and sulfur. (1)
- The chemical symbol for inorganic arsenic is As, and it has an atomic weight of 74.92 g/mol. (3)
- The chemical formula for arsine is $AsH_3$, and it has a molecular weight of 77.95 g/mol. (8)
- Arsine is a colorless gas with a disagreeable garlic odor. (8)
- Arsenic combined with elements such as oxygen, chlorine, and sulfur forms inorganic arsenic; inorganic arsenic compounds include arsenic pentoxide, arsenic trioxide, and arsenic acid. Arsenic combined with carbon and hydrogen forms organic arsenic; organic arsenic compounds include arsanilic acid, arsenobetaine, and dimethylarsinic acid. (1)

---

**Conversion Factors (only for the gaseous form):**
*To convert concentrations in air (at 25°C) from ppm to $mg/m^3$: $mg/m^3$ = (ppm) × (molecular weight of the compound)/(24.45). For inorganic arsenic: 1 ppm = 3.06 $mg/m^3$. For arsine: 1 ppm = 3.19 $mg/m^3$. To convert concentrations in air from $\mu g/m^3$ to $mg/m^3$: $mg/m^3$ = ($\mu g/m^3$) × (1 mg/1,000 µg).*

**Health Data from Inhalation Exposure (Inorganic Arsenic)**




**ACGIH TLV**–American Conference of Governmental and Industrial Hygienists' threshold limit value expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effects.
**NIOSH IDLH**–National Institute of Occupational Safety and Health's immediately dangerous to life or health concentration; NIOSH recommended exposure limit to ensure that a worker can escape from an exposure condition that is likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from the environment.
**NIOSH REL ceiling value**–NIOSH's recommended exposure limit ceiling; the concentration that should not be exceeded at any time.
**OSHA PEL**--Occupational Safety and Health Administration's permissible exposure limit expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effect averaged over a normal 8-h workday or a 40-h workweek.

The health and regulatory values cited in this factsheet were obtained in December 1999.
[a] Health numbers are toxicological numbers from animal testing or risk assessment values developed by EPA.
[b]Regulatory numbers are values that have been incorporated in Government regulations, while advisory numbers are nonregulatory values provided by the Government or other groups as advice. OSHA numbers are regulatory, whereas NIOSH and ACGIH numbers are advisory.
[c]The LOAEL is from the critical study used as the basis for the CalEPA chronic reference exposure level.

**References**


1. Agency for Toxic Substances and Disease Registry (ATSDR). *Toxicological Profile for Arsenic* (Draft). U.S. Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA. 1998.
2. Agency for Toxic Substances and Disease Registry (ATSDR). *Case Studies in Environmental Medicine. Arsenic Toxicity.* U.S. Public Health Service, U.S. Department of Health and Human Services, Altanta, GA. 1990.
3. U.S. Environmental Protection Agency. *Health Assessment Document for Inorganic Arsenic.* EPA/540/1-86/020. Environmental Criteria and Assessment Office, Office of Health and Environmental Assessment, Office of Research and Development, Washington, DC. 1984.
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5. U.S. Department of Health and Human Services. Registry of Toxic Effects of Chemical Substances (RTECS, online database). National Toxicology Information Program, National Library of Medicine, Bethesda, MD. 1993.
6. U.S. Environmental Protection Agency. *Integrated Risk Information System (IRIS) on Arsenic.* National Center for Environmental Assessment, Office of Research and Development, Washington, DC. 1999.
7. California Environmental Protection Agency (CalEPA). *Technical Support Document for the Determination of Noncancer Chronic Reference Exposure Levels. Draft for Public Comment.* Office of Environmental Health Hazard Assessment, Berkeley, CA. 1997.
8. M. Windolz. *The Merck Index, An Encyclopedia of Chemicals, Drugs, and Biologicals*. 10th ed. Merck and Co., Rahway, NJ. 1983.
9. American Conference of Governmental Industrial Hygienists (ACGIH). *1999 TLVs and BEIs. Threshold Limit Values for Chemical Substances and Physical Agents. Biological Exposure Indices.* Cincinnati, OH. 1999.
10. Occupational Safety and Health Administration (OSHA). Occupational Safety and Health Standards, Toxic and Hazardous Substances. *Code of Federal Regulations.* 29 CFR 1910.1000. 1998.
11. National Institute for Occupational Safety and Health (NIOSH). *Pocket Guide to Chemical Hazards.* U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. Cincinnati, OH. 1997.


A. * This fact sheet addresses the toxicity of the inorganic arsenic compounds as well as the toxicity of the gaseous arsenic trihydride: arsine.

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# Arsenic

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Arsenic

**Agency for Toxic Substances and Disease Registry**

**For most people, food constitutes the largest source of arsenic intake (about 25 to 50 micrograms per day--a microgram is one millionth of a gram), with lower amounts coming from drinking water and air. Some edible fish and shellfish contain elevated levels of arsenic, but this is predominantly in an organic form ("fish arsenic") that has low toxicity. Above-average levels of exposure are usually associated with one or more of the following situations ... Natural mineral deposits in some geographic areas ... Some waste-chemical disposal sites contain large quantities of arsenic ... Low levels of arsenic are found in most fossil fuels (oil, coal, gasoline, and wood) ... The main use of arsenic in this country is for pesticides ... Arsenic enters the body principally through the mouth, either in food or in water ... poison ... exposure may produce injury in a number of different body tissues irritation of the digestive tract, leading to pain, nausea, vomiting, and diarrhea ... decreased production of red and white blood cells, abnormal heart function, blood vessel damage, liver and/or kidney injury, and impaired nerve function causing a "pins-and-needles" ... Perhaps the single most characteristic systemic effect of oral exposure to inorganic arsenic is a pattern of skin abnormalities including the appearance of dark and light spots on the skin, and small "corns" on the palms, soles, and trunk ... increase the risk of cancer inside the body, especially in the liver, bladder, kidney, and lung ... Measuring the levels of arsenic in urine is the best way to determine exposures that occurred within the last 1 to 2 days ... Studies in humans indicate that there is considerable variation among different individuals, and it is difficult to identify with certainty the exposure ranges of concern ...**

Arsenic and Barium ITER Peer Review Meeting Summary
**June 14 and 15, 1999; University of Cincinnati, College of Medicine**
**epidemiological data adequate ... associated with structural malformations ... No, the existing epidemiological data are not adequate ... The review panel agreed to replace the term "teratogenic effects" with the word "malformations." ... The panel unanimously agreed that no, sodium arsenate, sodium arsenite, arsenic trioxide, and arsenic acid do not induce malformations in animals when administered orally. These forms of inorganic arsenic have been tested in several species of experimental animals ...**

Arsenic Trioxide, Hazardous substance fact sheet
**New Jersey Department of Health and Senior Services**
**Arsenic Trioxide can affect you when breathed ... Arsenic Trioxide is a CARNICOGEN ...**

Arsenic, Inorganic
**U.S. EPA IRIS**
**Sufficient. Studies of smelter worker populations ... have all found an association between occupational arsenic exposure and lung cancer mortality ... A cross-sectional study of 40,000 Taiwanese exposed to arsenic in drinking water found significant excess skin ... incidence of palmar keratosis, skin hyperpigmentation and hypopigmentation, and four skin cancers ... A significant dose-response relationship was found between arsenic levels in artesian well water in 42 villages in the southwestern Taiwan and age- adjusted mortality rates from cancers at all sites ...**

Arsenic and Compounds
**December 1994, United States Environmental Protection Agency**
**Other sources of inorganic arsenic exposure include burning plywood treated with an arsenic wood preservative or dermal contact with wood treated with arsenic ...**
**Reproductive/Developmental Effects: Several studies suggest that women who work in, or live near, metal smelters may have higher than normal spontaneous abortion rates, and their children may exhibit lower than normal birthweights. However, these studies are limited ... studies have reported inorganic arsenic exposure to be strongly associated with lung cancer ...**

Arsenic 7440382
**TRI database, Common Name:Arsenic; CAS Number:7440-38-2; DOT Number:UN 1558; Date:November, 1986**
**Arsenic can affect you when breathed in and may enter through the skin. Arsenic is a CARCINOGEN//HANDLE WITH EXTREME CAUTION. It may damage the developing fetus ... Arsenic is on the Hazardous Substance List because it is regulated by OSHA and cited by ACGIH, NIOSH, IARC, DOT and other authorities ... Cancer Hazard: Arsenic is a CARCINOGEN in humans. It has been shown to cause skin and lung cancer. Many scientists believe there is no safe level of exposure to a CARCINOGEN. Such substances may also have the potential for causing reproductive damage in humans ... Reproductive Hazard: Arsenic may damage the developing fetus. Arsenic should be handled as a potential teratogenic agent since some Arsenic compounds are known teratogens ... Medical Testing: Test for urine Arsenic (may not be accurate within 2 days of eating shellfish or fish; most accurate at the end of a workday) should not be greater than 100 micrograms per gram creatinine in the urine ...**

**[***] [S]** Arsenic
**Teratology.org**
**Arsenic ... Cadmium ... Lead ... Mercury**

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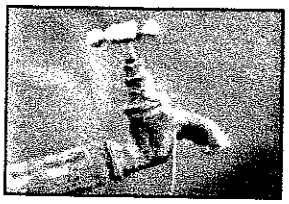
*Email:* Webmaster


**21/January/2002 dc**



## Scientific Facts on Arsenic

**Source document:**
IPCS (2001)
**Summary & Details:**
GreenFacts (2004)
*About this study*

« Previous Question | Level 1 Questions | Next Question »

Arsenic Links | About this study

Level 1: **Summary** | **Level 2: Details** | Level 3: **Source**

### 3. What are the levels of exposure to arsenic?



### 3.1 How much arsenic is there in the environment?

Arsenic concentrations in air range from very low (0.02 to 4 ng/m3) in remote and rural areas, to low (3 to about 200 ng/m3) in urban areas. Much higher concentrations (more than 1000 ng/m3) can be found near some industrial sources such as smelters, although in some countries, very high levels are no longer found because of measures taken to reduce pollution.

Concentrations of arsenic in open ocean seawater are typically low (1–2 µg/litre). In rivers and lakes, concentrations are somewhat higher but generally below 10 µg/litre. Exceptions are near man-made sources such as pesticide manufacturing or mining, where individual samples in surface waters may be 1000 times higher (up to 5000 µg /litre). Arsenic levels in groundwater are typically as low as in open ocean water (about 1–2 µg/litre), except in areas with volcanic rock and sulphide mineral deposits where arsenic levels can range up to 3000 µg/litre.

In sediment, arsenic concentrations range from 5 to 3000 mg/kg. The higher levels are found in areas contaminated by mining and smelting. In soil, concentrations range from 1 to 40 mg/kg, usually averaging around 5 mg/kg. Naturally elevated levels of arsenic in soils may be associated with the presence of sulphide ores in the rock layers below the soil. Soils heavily contaminated by activities such as mining of gold and arsenic, metal smelting and agricultural chemical application can have concentrations of arsenic up to several thousand milligrams per kg (mg/kg) or more. *More...*

Back to Summary | Level 2 Questions | More in the Source Document

Next Sub-Question | Top

Level 1 : **Summary** | **Level 2: Details** | Level 3: **Source**

# LABORATORY REPORT
## (Wipe/Bulk Solids)

**Batch No: 2006010700**


*Customer:* DEFENSE LOGISTICS AGENCY
*Attention:* ROBERT L SKRUCK
*Address:* DEFENSE STOCKPILE CENTER
WARREN DEPOT
PINE ST EXTENSION
*City, State:* WARREN, OH 44482
*Country:*

*Tel No:* (330) 652-5131
*Fax No:* (330) 652-5167


*Contact No:* 44455
*Project No:* NEW HAVEN DEPOT
*PO No:*

*Date Received:* January 24, 2006
*Date Reported:* January 26, 2006

*Date(s) Analyzed:* 01/26/06

The results relate only to the items tested. Unless noted below, samples were received in acceptable condition and all applicable quality control were within method specifications. Lab blanks are always subtracted before a result is reported, unless stated otherwise. Surface wipes that do not meet ASTM E 1792 specification are not recognized under the AIHA laboratory accreditation program. Bulk sample results reported as micrograms (µg) collected per gram (g) of sample. ND = None Detected at or above the detection limit. The units of µg/g are equivalent to parts per million (ppm) by weight. Percent (%) composition is equivalent to parts per hundred. For assistance with the content of this report please visit the Customer Services section of our web site at http://www.assaytech.com or contact Technical Support at 1-800-833-1258.

| Lab Sample ID / Lab Code | Date Sampled | Media Code - Client Sample ID | Chemical Analyzed | Quantity Found (µg) | Detection Limit (µg) | Sample Mass (g) | Sample Conc (µg/g) | Sample Conc (% wt/wt) |
|---|---|---|---|---|---|---|---|---|
| 2006002133 / ATOH | 1/24/06 | BULK - NH-AR-06-01 | ARSENIC (1) | ND | 1 | 0.482 | < 2 | < 0.0002 |
| 2006002135 / ATOH | 1/24/06 | BULK - NH-AR-06-02 | ARSENIC (1) | 1.95 | 1 | 0.507 | 3.8 | 0.00038 |
| 2006002136 / ATOH | 1/24/06 | BULK - NH-AR-06-03 | ARSENIC (1) | ND | 1 | 0.445 | < 2 | < 0.0002 |
| 2006002137 / ATOH | 1/24/06 | BULK - NH-AR-06-04 | ARSENIC (1) | ND | 1 | 0.506 | < 2 | < 0.0002 |
| 2006002139 / ATOH | 1/24/06 | BULK - NH-AR-06-05 | ARSENIC (1) | ND | 1 | 0.437 | < 2 | < 0.0002 |
| 2006002141 / ATOH | 1/24/06 | BULK - NH-AR-06-06 | ARSENIC (1) | ND | 1 | 0.491 | < 2 | < 0.0002 |

**Messages**

| Lab Sample ID | Message |
|---|---|

| Method | Method Name | Analyzed By | Approved By |
|---|---|---|---|
| 1 | NIOSH 7082 | S. LAUDERBAUGH | K. TAYLOR |

* Dark wood samples of Debris @ the New Haven Depot as a possible source of elevated arsenic in soils.

Results Reviewed by Person Monitored (If Applicable): _____
(Initials/Date)

Andrew S. McCreath & Son, Inc.
ANALYTICAL AND CONSULTING CHEMISTS

610 Willow Street
P.O. Box 1453
Harrisburg, PA 17105-1453
Telephone: (717) 238-9331
Telex: 84-2321
Fax: (717) 238-4843

# Analysis Report

August 10, 2005

Attn: Operations & Logistics Division, DNSC-01
Defense Logistics Agency
Defense National Stockpile Center
8725 John J. Kingman Road
Suite 3229
Fort Belvoir, Virginia 22060-6223

Gentlemen:

A sample was prepared and analyzed from the five (5) pounds of material received from you on July 27, 2005, identified as: Commodity: Fluorspar, Acid Grade, Location of material: New Haven Depot, Lot Number: Bin 2, Quantity Sampled: 5 Pounds, Date Sampled: July 26, 2005, Signature of Specialist: Nikki Horther. Results, lost at 105°C, are as follows:

| | |
|---|---|
| Moisture | 0.08% |

contained dried at 105°C:

| | |
|---|---|
| Calcium Fluoride | 96.98% |
| Calcium Carbonate | 0.78% |
| Silica | 1.08% |
| Sulphur | 0.014% |
| Sodium Chloride | <0.01% |
| R2O3 | 0.84% |
| Ferric Oxide | 0.55% |
| Arsenic | <20 ppm |
| Lead | <0.002% |
| Zinc | <0.002% |
| Phosphorus Pentoxide | 0.082% |
| Boron | <0.001% |

ppm - parts per million
< - less than
Lab #05072707

Yours very truly,

ANDREW S. McCREATH & SON, INC.

George W. Wightman

Andrew S. McCreath & Son, Inc.
ANALYTICAL AND CONSULTING CHEMISTS

610 Willow Street
P.O. Box 1453
Harrisburg, PA 17105-1453
Telephone: (717) 238-9331
Telex: 84-2321
Fax: (717) 238-4843

Analysis Report

September 29, 2005

Attn: Operations & Logistics Division, DNSC-01
Defense Logistics Agency
Defense National Stockpile Center
8725 John J. Kingman Road
Suite 3229
Fort Belvoir, Virginia 22060-6223

Gentlemen:

A sample was prepared and analyzed from the five (5) pounds of material received from you on July 27, 2005, identified as: Commodity: Fluorspar, Acid Grade, Location of material: New Haven Depot, Lot Number: Bin 2, Quantity Sampled: 5 Pounds, Date Sampled: July 26, 2005, Signature of Specialist: Nikki Horther. Results, by Spark Source Mass Spectrometry, are as follows:

| | |
|---|---|
| *Arsenic | <1 ppm |

*Subcontracted
ppm - parts per million
< - less than
Lab #05072707

Yours very truly,

ANDREW S. McCREATH & SON, INC.

George W. Wrighter

Andrew S. McCreath & Son, Inc.
ANALYTICAL AND CONSULTING CHEMISTS

610 Willow Street
P.O. Box 1453
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Telex: 84-2321
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Analysis Report

August 10, 2005

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Defense Logistics Agency
Defense National Stockpile Center
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Suite 3229
Fort Belvoir, Virginia 22060-6223

Gentlemen:

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| | |
|---|---|
| Moisture | 0.05% |

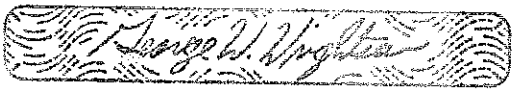
contained dried at 105°C:

| | |
|---|---|
| Calcium Fluoride | 96.65% |
| Calcium Carbonate | 1.07% |
| Silica | 1.03% |
| Sulphur | 0.077% |
| Sodium Chloride | <0.01% |
| R2O3 | 0.15% |
| Ferric Oxide | 0.043% |
| Arsenic | <20 ppm |
| Lead | 0.095% |
| Zinc | 0.003% |
| Phosphorus Pentoxide | 0.013% |
| Boron | 0.039% |

ppm - parts per million
< - less than
Lab #05072706

Yours very truly,

ANDREW S. McCREATH & SON, INC.



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| | |
|---|---|
| *Arsenic | <1 ppm |

*Subcontracted
ppm - parts per million
< - less than
Lab #05072706

Yours very truly,

ANDREW S. McCREATH & SON, INC.



George W. Wright

**Reilly, Kevin (HQ DLA)**

**From:** Boynton, Jason (HQ DLA)
**Sent:** Tuesday, March 07, 2006 7:35 AM
**To:** Romans, Scott (HQ DLA); Reilly, Kevin (HQ DLA); Christopher Holland (CHolland@psc.gov); Kualii, Lancelot (HQ DLA); Favors, Ronnie (HQ DLA); Olszewski, John (HQ DLA)
**Cc:** Chalfant, Patricia (HQ DLA); Reinders, John (HQ DLA)
**Subject:** RE: Meeting at New Haven on 10 March

***On page two of the information sheet it says any employee prior to 1975 should be entered into a medical monitoring program. However I believe that it should read any current employee prior to 1975 should be entered into such a program. "Currently all DNSC field personnel are in a Medical Monitoring Program". I say this based on the fact that after one separates from DNSC or any federal service we or the Government are no longer obligated to offer such service. If one believes after separation from federal service they may have been exposed to a health situation that is attributed to a DNSC work condition they can file a CA-1 or CA-2 to cover Medical Treatment.***

***My opinion is that we contact employees that have been separated from Federal Service and employed prior to 1975, advise them of the situation and means or procedures to file claim in case they get an asbestos related illness?***

*Jason D Boynton*
*DLA/DNSC E*
*Ft Belvoir, VA*
*(908) 707-4352 Work*
*(908) 725-3089 FAX*

**From:** Romans, Scott (HQ DLA)
**Sent:** Monday, March 06, 2006 4:10 PM
**To:** Reilly, Kevin (HQ DLA); Boynton, Jason (HQ DLA); Christopher Holland (CHolland@psc.gov); Kualii, Lancelot (HQ DLA); Favors, Ronnie (HQ DLA); Olszewski, John (HQ DLA)
**Cc:** Chalfant, Patricia (HQ DLA); Reinders, John (HQ DLA)
**Subject:** Meeting at New Haven on 10 March

All:

1. In anticipation of our meeting this Friday in New Haven with the depot employees, I have had the opportunity to update the draft information sheet John Reinders prepared last fall. Please review the sheet for accuracy and provide an comments to me by COB Wednesday. I plan to bring the sheet to New Haven for our meeting on Friday.

2. Not sure what anyone else had in mind in terms of an agenda for the meeting, but I suggest that we start by giving Doctor Holland the opportunity to summarize the FOH Report and its recommendations, and then take questions from the employees.

3. I think we need to be very clear on three important aspects of this issue:

a. What activities will DNSC undertake as part of its asbestos medical monitoring program. Make sure we all agree on the specific tests and services that will constitute medical

monitoring under this program, and make sure that Dr. Holland can agree that what DNSC plans to do is protective of the health of the depot employees.

b. Make sure that the plan of action for decon and re-sealing of the floors in Warehouse 214, and the decon of the floors in Warehouse 213, is accurately stated.

c. Make sure we all agree on the protective measures depot employees will use when working in warehouse areas potentially contaminated with asbestos.

4. It is my understanding that Cornel has directed all employees to attend the meeting on Friday, even if it means moving their CDO. Has coordination been made with the affected employees to make sure they can attend?

Thanks,

Scott

Scott Romans
Counsel
Defense National Stockpile Center
8725 John J. Kingman Road, Suite 3229
Fort Belvoir, VA 22060-6223
(703) 767-7647 (office)
(703) 767-4074 (fax)
(571) 437-7456 (cell)

# Information Sheet

**SUBJECT**: FOH Asbestos Review at New Haven

## Background:

- On June 30, 2005, the U. S. Public Health Service, Federal Occupational Health (FOH), conducted a review of past asbestos storage, asbestos monitoring and employee handling procedures of asbestos, and conducted area air and surface monitoring for asbestos at the New Haven Depot. The purpose of this study was to assess past employee exposures to asbestos in order to make recommendations for possible future health surveillance of employees who were potentially exposed to asbestos. FOH recommendations are contained in a report dated February 2, 2006.
- **The following is a recap of FOH actions/observations/conclusions during the site visit:**
  - Six employees were interviewed on their work history and their past handling of asbestos, and information was gathered on two absent employees. All but one employee had some contact with asbestos based on their job descriptions during the period of employment at the depot.
  - Records of the locations and time period of asbestos storage were reviewed. Asbestos was stored at the depot starting in the 1940s until 1999. In 1986, asbestos stock was re-bagged to prevent spillage.
  - Asbestos monitoring records were reviewed to assess potential exposures. Over 100 personal samples and at least 100 area samples have been collected since monitoring began in 1975. Much of the personal sampling occurred during normal work operations such as inventory counting, dry sweeping, and material staging and loading. All personal sampling results were below the OSHA PEL of 0.10 fibers per cubic centimeter of air as an 8-hour time-weighted average. Likewise, all area monitoring was below the OSHA standard. In addition to the air monitoring, hundreds of surface wipe or surface vacuum samples and bulk samples were collected since 1975. Results varied between buildings and time frames but asbestos fibers have been present throughout most of the depot warehouses on material containers and building surfaces.
  - Area air monitoring and surface wipe samples were collected for asbestos in Building 214. The results of area air monitoring for fibers were 0.004 fibers per cubic centimeter of air in section 1 and less than 0.003 fibers per cubic centimeter of air in section 2. Two of the nine surface vacuum samples did contain traces of chrysotile asbestos. A small piece of fibrous material was observed on a wooden box containing iodine and sampled for asbestos. The laboratory reported the sample contained 60 to 70 percent amosite asbestos. Amosite was stored in the building at one time and later removed.
  - Employee exposure levels to asbestos before 1975 is unknown. Since 1975, monitoring results indicate that most employees at the depot who worked in the warehouses were exposed to airborne asbestos at levels below the OSHA Permissible Exposure Limit.

- While air monitoring suggests asbestos levels did not exceed OSHA PEL, the level of asbestos exposure prior to the 1975 agency monitoring efforts is unclear. Because of this uncertainty, it might be prudent to enroll employees, at risk for asbestos exposure prior to 1975, into a medical monitoring program to better determine if there are any medical findings consistent with past asbestos exposure. At minimum this monitoring would include; a medical/exposure history, medical examination, spirometry, and chest x-ray. Based on the initial analysis of these medical evaluations, a determination could be made regarding any evidence of asbestos-related disease of the need for continued monitoring over the next few years.

- **Following is a recap of FOH recommendations in their February 2006 report:**
  - Building 214, Section 1, and any other contaminated buildings, should be cleaned to remove remaining asbestos.
  - Employees should continue to wear respirators in buildings known to contain asbestos debris.
  - While air monitoring suggests asbestos levels did not exceed OSHA PEL, the level of asbestos exposure prior to the 1975 agency monitoring efforts is unclear. Because of this uncertainty, it might be prudent to enroll current employees at risk for asbestos exposure prior to 1975 into a medical monitoring program to better determine if there are any medical findings consistent with past asbestos exposure. At minimum this monitoring would include; a medical/exposure history, medical examination, spirometry, and chest x-ray. Based on the initial analysis of these medical evaluations, a determination could be made regarding any evidence of asbestos-related disease of the need for continued monitoring over the next few years.

- **Following is a recap of established guidelines for asbestos:**
  - The Occupational Safety and Health Administration (OSHA) established a Permissible Exposure Limit (PEL) of 0.1 fibers per cubic centimeter.
  - DNSC has further reduced that level to 0.05 fibers per cubic centimeter.
  - Permissible Exposure Limit (PEL) is expressed in fibers per cubic centimeters. Fibers per cubic centimeter are determined by analyzing the number of microscopic fibers for a specific volume of air.

## DNSC-D Decisions

- The DNSC-D decision is to adopt the FOH recommendations
- Additionally, the DNSC-D decision is to enroll all depot employees in a medical monitoring program.

# Information Sheet

**SUBJECT:** FOH Asbestos Review at New Haven

## Background:

- On June 30, 2005, the U. S. Public Health Service, Federal Occupational Health (FOH), conducted a review of past asbestos storage, asbestos monitoring and employee handling procedures of asbestos, and conducted area air and surface monitoring for asbestos at the New Haven Depot. The purpose of this study was to assess past employee exposures to asbestos in order to make recommendations for possible future health surveillance of employees who were potentially exposed to asbestos. FOH recommendations are contained in a report dated February 2, 2006.
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  - Records of the locations and time period of asbestos storage were reviewed. Asbestos was stored at the depot starting in the 1940s until 1999. In 1986, asbestos stock was re-bagged to prevent spillage.
  - Asbestos monitoring records were reviewed to assess potential exposures. Over 100 personal samples and at least 100 area samples have been collected since monitoring began in 1975. Much of the personal sampling occurred during normal work operations such as inventory counting, dry sweeping, and material staging and loading. All personal sampling results were below the OSHA PEL of 0.10 fibers per cubic centimeter of air as an 8-hour time-weighted average. Likewise, all area monitoring was below the OSHA standard. In addition to the air monitoring, hundreds of surface wipe or surface vacuum samples and bulk samples were collected since 1975. Results varied between buildings and time frames but asbestos fibers have been present throughout most of the depot warehouses on material containers and building surfaces.
  - Area air monitoring and surface wipe samples were collected for asbestos in Building 214. The results of area air monitoring for fibers were 0.004 fibers per cubic centimeter of air in section 1 and less than 0.003 fibers per cubic centimeter of air in section 2. Two of the nine surface vacuum samples did contain traces of chrysotile asbestos. A small piece of fibrous material was observed on a wooden box containing iodine and sampled for asbestos. The laboratory reported the sample contained 60 to 70 percent amosite asbestos. Amosite was stored in the building at one time and later removed.
  - Employee exposure levels to asbestos before 1975 is unknown. Since 1975, monitoring results indicate that most employees at the depot who worked in the warehouses were exposed to airborne asbestos at levels below the OSHA Permissible Exposure Limit.

- While air monitoring suggests asbestos levels did not exceed OSHA PEL, the level of asbestos exposure prior to the 1975 agency monitoring efforts is unclear. Because of this uncertainty, it might be prudent to enroll employees, at risk for asbestos exposure prior to 1975, into a medical monitoring program to better determine if there are any medical findings consistent with past asbestos exposure. At minimum this monitoring would include; a medical/exposure history, medical examination, spirometry, and chest x-ray. Based on the initial analysis of these medical evaluations, a determination could be made regarding any evidence of asbestos-related disease of the need for continued monitoring over the next few years.

- **Following is a recap of FOH recommendations in their February 2006 report:**
  - Building 214, Section 1, and any other contaminated buildings, should be cleaned to remove remaining asbestos.
  - Employees should continue to wear respirators in buildings known to contain asbestos debris.
  - While air monitoring suggests asbestos levels did not exceed OSHA PEL, the level of asbestos exposure prior to the 1975 agency monitoring efforts is unclear. Because of this uncertainty, it might be prudent to enroll current employees at risk for asbestos exposure prior to 1975 into a medical monitoring program to better determine if there are any medical findings consistent with past asbestos exposure. At minimum this monitoring would include; a medical/exposure history, medical examination, spirometry, and chest x-ray. Based on the initial analysis of these medical evaluations, a determination could be made regarding any evidence of asbestos-related disease of the need for continued monitoring over the next few years.
- **Following is a recap of established guidelines for asbestos:**
  - The Occupational Safety and Health Administration (OSHA) established a Permissible Exposure Limit (PEL) of 0.1 fibers per cubic centimeter.
  - DNSC has further reduced that level to 0.05 fibers per cubic centimeter.
  - Permissible Exposure Limit (PEL) is expressed in fibers per cubic centimeters. Fibers per cubic centimeter are determined by analyzing the number of microscopic fibers for a specific volume of air.

## DNSC-D Decisions

- The DNSC-D decision is to adopt the FOH recommendations
- Additionally, the DNSC-D decision is to enroll all depot employees in a medical monitoring program.

# Information Sheet

**SUBJECT:** FOH Asbestos Review at New Haven

## Background:

- On June 30, 2005, the U. S. Public Health Service, Federal Occupational Health (FOH), conducted a review of past asbestos storage, asbestos monitoring and employee handling procedures of asbestos, and conducted area air and surface monitoring for asbestos at the New Haven Depot. The purpose of this study was to assess past employee exposures to asbestos in order to make recommendations for possible future health surveillance of employees who were potentially exposed to asbestos. FOH recommendations are contained in a report dated February 2, 2006.
- **The following is a recap of FOH actions/observations/conclusions during the site visit:**
  - Six employees were interviewed on their work history and their past handling of asbestos, and information was gathered on two absent employees. All but one employee had some contact with asbestos based on their job descriptions during the period of employment at the depot.
  - Records of the locations and time period of asbestos storage were reviewed. Asbestos was stored at the depot starting in the 1940s until 1999. In 1986, asbestos stock was re-bagged to prevent spillage.
  - Asbestos monitoring records were reviewed to assess potential exposures. Over 100 personal samples and at least 100 area samples have been collected since monitoring began in 1975. Much of the personal sampling occurred during normal work operations such as inventory counting, dry sweeping, and material staging and loading. All personal sampling results were below the OSHA PEL of 0.10 fibers per cubic centimeter of air as an 8-hour time-weighted average. Likewise, all area monitoring was below the OSHA standard. In addition to the air monitoring, hundreds of surface wipe or surface vacuum samples and bulk samples were collected since 1975. Results varied between buildings and time frames but asbestos fibers have been present throughout most of the depot warehouses on material containers and building surfaces.
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- **Following is a recap of FOH recommendations in their February 2006 report:**
  - Building 214, Section 1, and any other contaminated buildings, should be cleaned to remove remaining asbestos.
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## DNSC-D Decisions

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# Information Sheet

**SUBJECT:** FOH Asbestos Review at New Haven

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## DNSC-D Decisions

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