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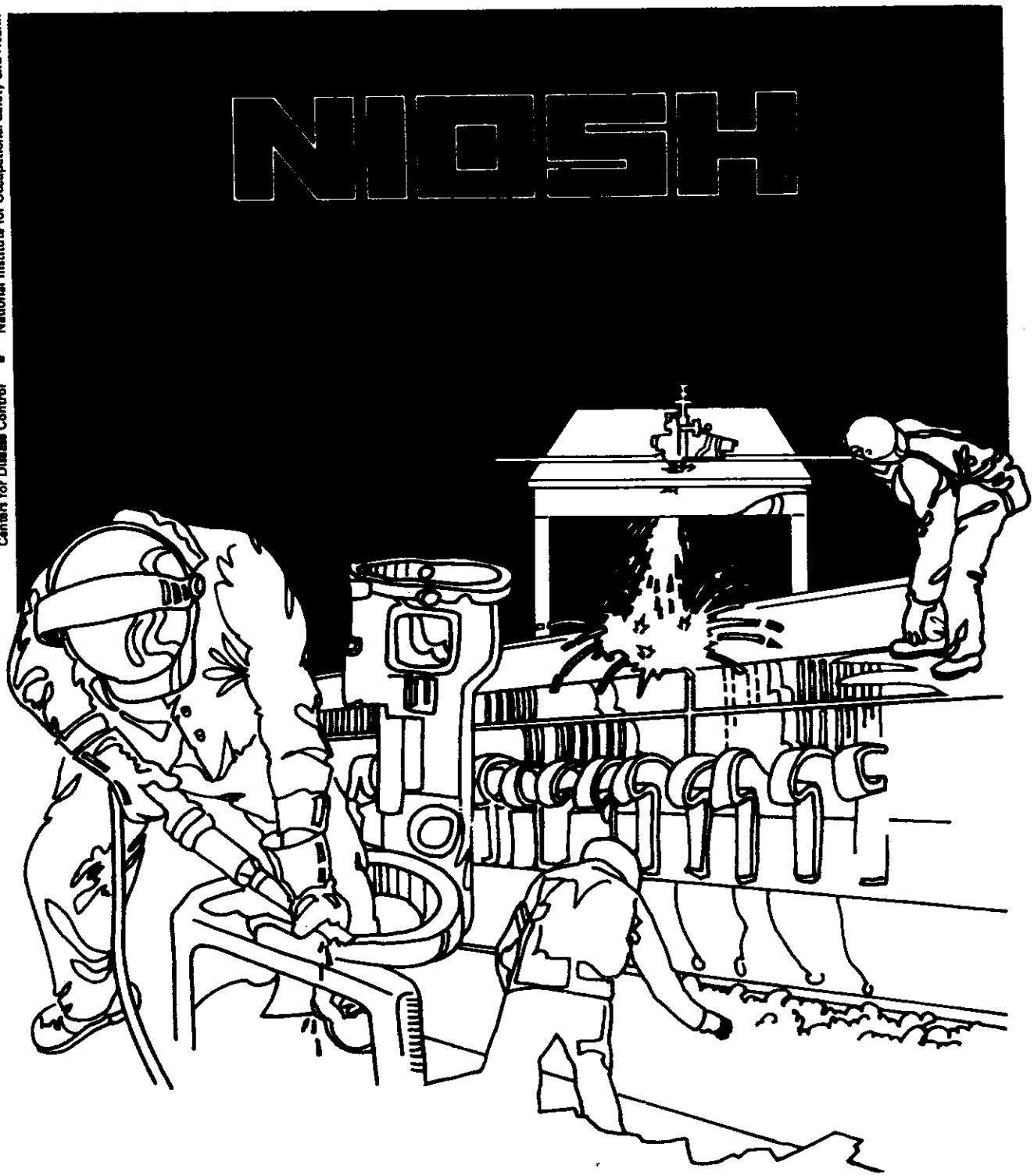

Health Hazard Evaluation Report

MHETA 87-162-1864
DENALI NATIONAL PARK
DENALI, ALASKA

PREFACE

The Hazard Evaluations and Technical Assistance Branch of NIOSH conducts field investigations of possible health hazards in the workplace. These investigations are conducted under the authority of Section 20(a)(6) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 669(a)(6) which authorizes the Secretary of Health and Human Services, following a written request from any employer or authorized representative of employees, to determine whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found.

The Hazard Evaluations and Technical Assistance Branch also provides, upon request, medical, nursing, and industrial hygiene technical and consultative assistance (TA) to Federal, state, and local agencies; labor; industry and other groups or individuals to control occupational health hazards and to prevent related trauma and disease.

Mention of company names or products does not constitute endorsement by the National Institute for Occupational Safety and Health.

MHETA 87-162-1864
DENALI NATIONAL PARK
DENALI, AK
DECEMBER 1987

NIOSH INVESTIGATOR
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I. SUMMARY

A health hazard evaluation was conducted by the National Institute for Occupational Safety and Health (NIOSH) at the National Park Service Facilities at Denali National Park and Preserve on April 28 through May 4, 1987. NIOSH was requested to survey the facility to identify areas where asbestos may be present, to recommend corrective measures where appropriate, and to provide asbestos-related training to maintenance workers.

Buildings at the facility were surveyed and one hundred and eight bulk samples of building materials were collected for subsequent laboratory analysis. Forty-six samples were found to contain asbestos. Eighty-two percent of the positive samples were pipe and tank insulation. The remaining positive samples were gaskets and cementitious transite board. For the most part, the asbestos-containing materials are covered or bound and are in good condition. The asbestos-containing materials can remain in place as long as they are supervised in an asbestos management program. Only a small amount of asbestos-containing materials need remedial action beyond minor repair and supervision.

Keywords: SIC 9441 asbestos

II. INTRODUCTION AND BACKGROUND

The National Park Service requested the survey to identify asbestos containing materials and to provide asbestos-related training. Two industrial hygienists from the Division of Respiratory Disease Studies working in conjunction with Denali facility management personnel conducted the evaluation.

III. METHODS AND MATERIALS

Buildings at the facility were inspected and samples of building materials were selected for analysis based on appearance or functional requirements which could be provided by the properties of asbestos fibers. An attempt was made to collect and analyze materials which were representative of an area, because it was impractical to sample all materials in all locations. In addition, the physical condition of suspect materials and their potential for fiber release was visually assessed. Samples were screened in the field with a polarized light microscope. All of the field samples were subsequently analyzed with a Zeiss Polarized Light Microscope per the Environmental Protection Agency's Interim Method for the Determination of Asbestos in Bulk Insulation Samples (EPA-600/M4-82-020-Dec. 1982). Bulk samples were first examined for homogeneity and fiber morphology. Positive identification of asbestos fibers was then determined by polarized light and dispersion staining techniques as described by McCrone.[1]

Health Evaluation Criteria

In the fall of 1979, a NIOSH-OSHA committee was formed to review the scientific information concerning asbestos-related disease. Relevant excerpts are summarized below:

1. Asbestos is defined to be chrysotile, crocidolite, and fibrous cummingtonite-grunerite including amosite, fibrous tremolite, fibrous actinolite and fibrous anthophyllite. The fibrosity of the above materials is ascertained on a microscopic level with fibers defined to be particles with an aspect ratio of 3 to 1 or larger.

2. Animal studies demonstrate that all commercial forms and several non-commercial forms of asbestos produce pulmonary fibrosis, mesothelioma, and lung neoplasms.

3. Available data show the the lower the exposure, the lower the risk of developing asbestosis and cancer. Excessive cancer risks, however, have been demonstrated at all fiber concentrations studied to date. Evaluation of all available human data provides no evidence for a

threshold or "safe" level of asbestos exposure. Accordingly, the committee recommends that, to the extent uses of asbestos materials cannot be eliminated or less toxic materials substituted, worker exposures must be controlled to the maximum extent possible.

The presence of asbestos-containing materials in a building does not mean the health of building occupants is necessarily endangered. In order for the asbestos to be a health hazard, fiber release with airborne exposure must occur. Asbestos materials that contain the fibers with a wrap such as covered pipe insulation or bound in a matrix such as cementitious transite board pose a negligible health hazard when left undisturbed and in good condition.

IV. OBSERVATIONS AND DISCUSSIONS

Use of the polarized light microscope on site was instrumental in identifying the majority of asbestos-containing materials and allowed their location to be pointed out and discussed with facility management personnel at the close of the survey. The on-site analysis identified problem areas and allowed the discussion of appropriate recommendations that could be instituted at once.

A total of one hundred and eight samples of building materials and maintenance parts were collected for analysis for asbestos. Forty-six samples were found to contain asbestos, eighty-two percent of the positive samples were pipe and boiler/hot water tank insulation. The remaining positive samples were gasket materials or transite board. No sprayed or troweled materials were identified at the facility. Appendix one contains a listing of each sample type, location, result, and recommendations. Observations of each building surveyed follows:

Building #21 - Headquarters No samples of the insulated pipes at the utilidor or the reheat room were collected because they had recently been reinsulated with fiberglass. Pipes leading to and from the ventilation unit had fiberglass straights and mineral wool elbows (each of the elbows were sampled). Samples of two different types of ceiling tiles used in the office areas were collected. No asbestos was detected in either sample. Photos of the ceiling tiles sampled have been enclosed.

Building 53 Garage No insulated or suspect materials that might contain asbestos were seen in this building.

Building #101 - The Overthere No samples were collected. The only insulation was fiberglass batting along the roof line.

Building #102 Carpenters Shop No asbestos was found in the samples collected in this building. Pipe straights were insulated with fiberglass while nine elbow samples were found to contain mineral wool. The pipes in the shop downstairs and the small room off the bottom of the stairs (a locked storage area was not surveyed) were insulated with fiberglass. No asbestos was detected in 12 samples of elbow insulation.

Building #103 - Ranger Cache No insulated materials were seen in this building. A sample of ceiling tile in the ranger's office was collected and no asbestos was detected.

Building #105 - Kennels The paper material used behind the stove contained asbestos.

Building #107 - Plumbing Shop No insulation or other suspect building materials were seen; however, there was a roll of white paper in a corner that contained asbestos.

Building #118 Asbestos insulated pipes ran the length of the building from the electrician's shop all the way through the garage. The insulation is in good condition, but there are some exposed areas that need to be covered. The insulated pipes in the electricians work area are prone to damage due to their location next to the work table. In the garage, the pipes over the wood storage bin also have the potential for being damaged from handling the wood.

Building #141 - The Outback A sample of the ceiling was collected; no asbestos was detected. Due to flooding, the basement area was not surveyed.

Building #170 The Far-out No insulated or suspect materials that might contain asbestos were located.

Building #12 Apartments Pipes in the basement laundry and shop area were covered with asbestos insulation, some of which was in poor condition. A piece of asbestos insulation was found on the floor. Reportedly, the asbestos insulated pipes from the basement run upstairs and were enclosed behind new walls when the building was remodeled. A record of this should be made and kept on file, in case any additional remodeling or plumbing work is conducted.

Building #13 Apartments The basement storage and laundry room had asbestos insulated pipes that had some exposed areas. A small amount of insulation debris was found on the floor. As with building #12, it was reported that asbestos insulated pipes may be enclosed behind new walls constructed upstairs.

Building #23 Asbestos-containing insulation was found in the basement. A return line coming out of the utilidor had asbestos insulation which was in good condition, although there were a couple of exposed areas which should be covered. No asbestos was detected in a sample of elbow insulation collected from a fiberglass insulated pipe. The forced air ventilation duct was covered with an asbestos wrap. There was some asbestos mudding around the joint where a round duct joins the rectangular duct, at ceiling height, at the foot of the basement stairs. There was some of the same asbestos-mud used on a pipe elbow over the shop area.

Building #26 Butcher Residence Heating pipes running from the utilidor through the crawl space were insulated with fiberglass. Samples of elbow insulation were collected from a pipe coming out of the utilidor and from a pipe in the crawl space. The elbow samples contained mineral wool; no asbestos was detected in either sample. A defunct duct, that had been closed off in the basement had a paper wrap that contains asbestos.

Building #27 Jones Residence A sample of elbow insulation and a sample of insulation debris that was laying on the ground in the crawl space were collected. No asbestos was detected in either sample.

Building #28 Pipes from the utilidor that ran through the crawl space and basement area were insulated with fiberglass. No asbestos was detected in a sample of elbow insulation collected from a pipe in the crawl space. A sample of the paper covering that was tacked to the back of the basement stairs contained cellulose, no asbestos was detected.

Building #34 Most of the pipes in the basement area were insulated with fiberglass. An elbow sample collected from a fiberglass insulated pipe in the crawl space contained mineral wool; no asbestos was detected. A second type of pipe insulation used in the basement was a corrugated paper wrap which did contain asbestos. The forced air duct had been wrapped with a duct tape that also contains asbestos.

Building #51 Apartments Asbestos-containing insulation was found in the basement areas of the building. No insulated pipes were seen in the upstairs area, but may be enclosed behind walls. Each of the apartments had a basement laundry and storage area equipped with utility sinks that were supplied by pipes that were insulated with asbestos. The insulation was in good condition, however there were some exposed areas that needed to be covered. The sink in the laundry room of Apt 51 F had been removed but the asbestos-insulated pipes still remained. In addition to the utility sink pipes, there

were heating system pipes that were insulated with fiberglass along the straight runs but had asbestos insulated elbows. The pipes in the "public" laundry room off the rec-room also had fiberglass straight runs with asbestos-insulated elbows. In addition, the hot water tank was covered with asbestos-insulation. The tank had been wrapped in plastic to contain the asbestos; however, it was open along the bottom of the tank and the plastic had some small rips. The tank was next to the washer/dryer, and was used as a table to hold laundry. The tank insulation was in fair condition but because of its location and its use to hold laundry, the insulation is prone to damage. A small amount of loose insulation was found on the floor under the tank. In the boiler room, most of the pipe insulation was fiberglass; however, the "heat exchanger" pipe straight was covered with asbestos, and the large pipe with seven valves had a small amount of valve insulation that contained asbestos. A sample of elbow insulation from a fiberglass insulated pipe contained asbestos. All pipe and elbow insulation that is not yellow fiberglass in building #51 should be assumed to be asbestos and handled appropriately. Most of the elbows were in fair condition with some exposed areas.

Building #111 A sample of ceiling tile was the only suspect building material identified at #111. No asbestos was detected in the ceiling tile.

Building #123 Pipes in the crawl space under the house were insulated with asbestos. The insulation was in fair condition with a couple of exposed areas. Some of the insulation had come off the pipes and had fallen to the ground. During the summer, heating for the house is provided by a small unit recessed in the floor of the main living area. It is possible that the heater draws some air from the crawl space; however, the health hazard should be minimal since most of the insulation is wrapped and it is not being actively disturbed. It would be prudent to seal the area around the space heater so that no air is drawn from the crawl space. Reportedly, asbestos transite board was used under the plywood in the kitchen. Left undisturbed, it poses no problem; however, a record should be kept of its location to ensure that it will be handled appropriately during any future remodeling or repair work.

Autoshop The water pipes at the autoshop were insulated with black rubber or fiberglass; however, used pipes with an asbestos wrap were found upstairs in the storage area. It was impossible to check and identify all the gasket materials and replacement parts in use, or stored at the autoshop. A spot check revealed both asbestos-containing materials, such as Ankorite sheet gasket, a manhole gasket replacement part, and the gasket in use on the

hot-water tank, and asbestos-free materials such as the Garlack 3400 sheet gasket material. Samples of Felpro-Karropak and McChord sheet gasket material were sampled and found to be asbestos-free; however, no product numbers were identified. Product information and purchasing records should be consulted to help identify asbestos/non-asbestos materials in use at the autoshop. Gasket materials of unknown composition should be handled with the same precaution as asbestos-containing gaskets. The autoshop has an enclosed cylinder/High Efficiency Particulate Air(HEPA)vacuum system that can be used to enclose brake drum assemblies of cars and light trucks to contain asbestos exposure during brake and clutch repair. The cylinder/HEPA system must be used during the replacement of clutch plates and brake pads, shoes and linings. The HEPA vacuum can be disconnected from the brake assembly isolation cylinder when the cylinder is not being used. Nilfisk also manufactures a unit that fits brakes drums in the 12-19 inch size range common to large commercial vehicles. A cylinder to fit the larger size brake drums should be purchased or an alternate control method as described in the enclosed Appendix F of the Occupational Safety and Health Administration Standard for Occupational Exposure to Asbestos, Tremolite, Anthophyllite and Actinolite.(2) must be utilized.

Paint and Sign Storage Buildings (near autoshop) No insulated or suspect materials that might contain asbestos were seen.

C-camp A sample of ceiling material was collected. No asbestos was detected in the sample.

Quonset Huts (near C-camp) No insulated or suspect materials that might contain asbestos were seen.

Hotel The areas maintained by the Park Service were surveyed, this included the lobby, the kitchen, and the dining room. The hotel itself was not surveyed. The spackled ceiling in the lobby was the only suspect material that was seen. No asbestos was detected in two samples of the ceiling material.

Powerhouse Located Near Hotel Pipe and boiler insulation on the main floor was found to contain asbestos. The downstairs area had both asbestos-containing insulation and fiberglass. Approximately half the pipe insulation, the hot water tank insulation and the gaskets on the two new boilers contained asbestos. Essentially all the insulation at the powerhouse, except for the readily identifiable yellow fiberglass, should be handled as asbestos. The insulation, as a whole, was in fairly good condition. There were some exposed areas that need to be covered. The attic storage area contains bags of loose asbestos, and unwrapped asbestos pipe insulation. The entire

attic area should be considered to be contaminated with asbestos. A sample of the blown insulation covering the floor joists of the attic was contaminated with asbestos.

Dormitory The dormitory was not surveyed due to recent remodeling. There were asbestos-insulated pipes at the entrance to the utilidor that run to the powerhouse.

In addition to identifying asbestos materials, a four hour asbestos information course was presented to maintenance employees. The course discussed asbestos-related health effects, worker protection, medical surveillance, glovebag procedures and the components of an operation and maintenance program for handling asbestos-containing materials. A manual containing guidance material on each of the topics was provided to each employee. Two of the facility personnel, who had completed an extensive asbestos training program and were certified by the State of Alaska, will be managing the asbestos-containing materials at Denali.

V. CONCLUSIONS

Asbestos exposure to the general work force and residents at Denali is minimal. The bulk of the asbestos-containing materials was pipe and tank insulation which was covered with a protective wrap, or jacket, that prevents fiber release (unless physically damaged). For the most part, the insulation was in good condition with only small exposed areas that need minor repair. Non-asbestos plastering can be used to restore open joints, wrapped or plastered areas that are damaged and areas around valves and joints. Encapsulants can also be used, however do not use duct tape as it can become brittle when exposed to heat. As long as the insulation is intact no further action beyond management with an Operations and Maintenance program as outlined in the attachment is required. Periodic visual inspections are required to ensure that the asbestos-containing materials are kept in good condition. When inspection shows that the insulation is extensively damaged or deteriorated, removal is appropriate. Unless damaged, removal of the asbestos-containing insulation can be delayed and can be combined with building repair, renovation, or with scheduled maintenance to equipment or building systems. At this time, there are only a few of areas, due to the condition of the insulation and the potential for disturbance and damage that need further control beyond covering/wrapping exposed areas.

Asbestos transite board was used at Toklat in the cook shack and the "Silver Bullet" and under the kitchen counter in building 123. The asbestos in transite is held in place by the hard, cementitious bonding material. The transite is not a hazard except during abrasive handling such as sawing, drilling, or sanding. The transite can remain in place but should be labeled as asbestos. The remaining asbestos-containing

materials are gasket and sleeve materials. Begin systematic replacement of gasket and sleeve materials with asbestos substitute materials, whenever feasible.

A major consideration in any remedial action involves the problem of creating a health hazard where none previously existed or increasing the magnitude of an identified problem. All work with asbestos-containing materials should be conducted under the direction and supervision of Mr. Keith and Mr. Donachek, who have been trained and certified to work with asbestos. Enclosed is an additional copy of the guidance manual that was provided in the course provided to the maintenance personnel.

VI. RECOMMENDED ACTIONS

The following areas require remedial action per guidance instructions and under supervision of the asbestos certified personnel: The pipe insulation in the basements of buildings #12 and #13 is in poor condition and is likely to sustain damage from use of the areas. The basements should be thoroughly cleaned with a High Efficiency Particulate Air (HEPA) vacuum and wet cleaned. The pipe insulation should be removed as soon as possible following recommended glove bag procedures. In the interim, the pipes should be misted with water and wrapped with polyethylene sheeting with a minimum amount of disturbance and then candy-stripped in place with duct tape. The occupants should be informed of the location and the health hazards associated with asbestos.

The hot water tank in the basement of Building 51 should be enclosed, with the minimum amount of disturbance, by a solid barrier such as a wooden box to prevent damage. Before the enclosure is put in place, the area around the bottom of the tank should be vacuumed with the HEPA vacuum.

In the residences it is especially important to keep asbestos containing insulation well wrapped and in good condition to prevent exposure to children and family members. The insulation of concern would be the asbestos-insulated pipes and elbows used at building 51, the corrugated paper wrap at building 34 and the mudding, and asbestos pipe straight at building 23. Asbestos containing insulation at residences that are accessible and could be damaged by children should be replaced with non-asbestos containing materials.

The asbestos insulated pipes in Building 118 near the electricians' work table area and in the garage over the wood storage should have exposed areas of insulation covered with a non-asbestos plaster or encapsulant. Because of their potential for being damaged the asbestos-containing insulation should be removed when time and resources permit. In the interim, the insulation should be labeled and watched closely for damage.

The asbestos containing materials in the attic of the power house need to cleaned out and disposed of properly. In addition, all the items stored in the attic should be considered to be contaminated with asbestos and be discarded with the asbestos materials. Because the area has restricted access, clean-up can be delayed until time and resources are available. In the interim, the attic should remain locked and an asbestos hazard warning posted. To alleviate concern about the possibility of asbestos falling through the floor boards of the attic, due to vibration when the auxiliary generator is used, polyethylene sheeting can be tacked to the ceiling area underneath the attic.

VII. REFERENCES

1. McCrone W. The asbestos particle atlas. Ann Arbor Science, 1980.

2. Code of Federal Regulations. U.S. Dept. of Labor. Occupational Safety and Health Administration Standards. 29 CFR 1910.1001, 1987.

VIII. AUTHORSHIP AND ACKNOWLEDGMENTS

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IX. DISTRIBUTION AND AVAILABILITY OF REPORT

Copies of this report are currently available upon request from NIOSH, Division of Standards Development and Technology Transfer, Publications Dissemination Section, 4676 Columbia Parkway, Cincinnati, Ohio 45526. After 90 days, the report will be available through the National Technical Information Service (NTIS), 5285 Port Royal, Springfield, Virginia 22161. Information regarding its availability through NTIS can be obtained from NIOSH Publications Office at the Cincinnati address. Copies of this report have been sent to:

1. National Park Service
2. NIOSH, Regional Office 8
3. OSHA

For the purpose of informing affected employees, copies of this report should be posted by the employer in a prominent place accessible to the employees for a period of 30 calendar days.

APPENDIX 1

LOCATION	RESULT	ACTION REQUIRED
	Building #21 -- Headquarters	
Basement HVAC unit-9 elbows	No asbestos detected	No action required
Ceiling tile type A	No asbestos detected	No action required
Ceiling tile type B	No asbestos detected	No action required
	Building #102 -- Carpenter Shop	
Elbow insulation heater near rail rack-5 samples	No asbestos detected	No action required
Elbow insulation heater by utility sink-4 samples	No asbestos detected	No action required
Basement 102 sign shop-7 elbow samples	No asbestos detected	No action required
Basement storage room-4 elbow samples	No asbestos detected	No action required
	Building #103	
Ceiling tile	No asbestos detected	No action required
	Building #105 Kennel	
Paper material behind stove	Chrysotile 45-55%	Fair condition
	Building #107 -- Plumbing Shop	
Roll of white paper in corner of shop	Chrysotile 30-35%	Good condition, replace with non-asbestos substitute
	Building #118	
Garage, 2 insulated pipes run the length of garage	Amosite 25-40% Chrysotile 25-40%	Good condition, cover exposed area
Attic, blown insulation	No asbestos detected	No action required

LOCATION	RESULT	ACTION REQUIRED
Electricians office pipe insulation	Amosite 25-40% Chrysotile 25-40%	Fair condition, cover & reinforce exposed areas/inspect/remove when time/resources permit
	Building #141	
Library ceiling sample	No asbestos detected	No action required
	Building #12	
Second floor ceiling tile	No asbestos detected	No action required
Basement pipe insulation	Chrysotile 60-65%	Fair to poor condition, remove & reinsulate with non-asbestos substitute
	Building #13	
Basement, old steam pipe insulation	Chrysotile 60-65%	Fair to poor condition, remove & reinsulate with asbestos substitute
Water pipe straight	Chrysotile 40%	Fair condition, remove/reinsulate with asbestos substitute
Water pipe elbow	Chrysotile/amosite 1-5%	Fair condition, remove/reinsulate with asbestos substitute
	Building #23 -- Superintendent Residence	
Basement, paper wrap on ventilation duct	Chrysotile 35-40%	Good condition, paint over it
Basement, insulation return pipe coming out of utilidor	Chrysotile 10-25%	Good condition, cover exposed areas/remove when time and resources available
Basement, elbow from fiberglass insulated pipe	No asbestos detected	No action required
Basement, "mudding" insulation around joint where round pipe meets rectangular duct at the foot of stairs	Amosite 10-20%	Good condition, but no covering, should be removed
Pipe elbow over shop area	Amosite 10-20%	Good condition, but no covering, should be removed

LOCATION	RESULT	ACTION REQUIRED
Building #26 -- Butcher Residence		
Two elbows from fiberglass insulated pipe in utilidor/ crawl space	No asbestos detected	No action required
Basement, paper insulation from "closed off" duct	Chrysotile 35-40%	Good condition, material is enclosed, no action required, keep record for future maint/remodeling
Building #27 -- Jones Residence		
Insulation on ground in crawl space	No asbestos detected mineral wool	No action required
Elbow material from pipe in crawl space	No asbestos detected	No action required
Building #28		
Basement, paper tacked to back of stairs	No asbestos detected	No action required
Basement, elbow from fiberglass insulated pipe	No asbestos detected	No action required
Building #34		
Crawl space, elbow from fiberglass insulated pipe	No asbestos detected	No action required
Basement, corrugated paper pipe insulation	Chrysotile 15-25%	Fair condition/consider removal if accessible to children
Basement, paper tape forced air duct	Chrysotile	Good condition, paint over the tape
Building #51 -- Basement		
Apartment A elbow insulation	Amosite 1-10%	Good condition, wrap exposed area/consider removal if accessible to children
Apartment C pipe insulation	Chrysotile 5-10% Amosite 1-5%	Good condition, wrap exposed area/consider removal if accessible to children

LOCATION	RESULT	ACTION REQUIRED
Apartment D paper wrap on pipe to utility sink	Chrysotile 10-25%	Good condition, wrap ends/exposed areas, consider removal if accessible to children
Rec. Room insulated pipe that runs on wall along length of room	Chrysotile 5-10% Amosite 15-25%	Good condition, inspect on regular basis/ potential for damage
Building #51 - Basement Room off Rec Room (with washer/dryer/hot water tank)		
Hot water tank insulation	Chrysotile 40-60% Amosite 5-15%	Fair condition, enclose with solid barrier, label tank asbestos warning
Heat return elbow above hot water tank	Chrysotile 25-40% Amosite 1-5%	Fair condition, cover exposed area
Remaining insulation on bare pipe	Chrysotile 1-5% Amosite 25-40%	Fair condition, cover exposed area
Pipe labeled feed base A 3 elbows	Chrysotile 5-25% Amosite 5-10%	Fair condition, cover exposed area
Building #51 -- Boiler room		
Large pipe with 7 valves, sample of remaining valve insulation	Chrysotile 10-15% Amosite 1-5%	Deteriorated condition remove remaining valve reinsulate non-asbestos
Pipe insulation	No asbestos detected	No action required
Heat exchanger pipe insulation straight	Chrysotile 25-40% Amosite 1-10%	Good condition
Exposed elbow	Chrysotile 5-15% Amosite 1-5%	Fair condition, cover
Building #111		
Ceiling tile	No asbestos detected	No action required
Building #123		
Crawl space pipe insulation	Amosite 25-35%	Fair condition, restrict access, remove when time/ resources permit

LOCATION	RESULT	ACTION REQUIRED
	Auto shop	
Gasket on hot water tank	Chrysotile 90-95%	Good condition
Paper wrap on used pipes stored upstairs	Chrysotile 10-20%	Dispose of pipes
Gloves in cabinet near welding	No asbestos detected	No action required
Spare head gasket (Cleaver Brothers)	No asbestos detected	No action required
Spare manhole gasket for boiler	Chrysotile 100%	Good condition
Garlack 3400 sheet gasket material	No asbestos detected	No action required
Felpro-Karropak sheet gasket material	No asbestos detected	No action required
Ankorite sheet gasket material	Chrysotile 25-35%	Good condition
McChord sheet gasket material	No asbestos detected	No action required
	C-Camp	
Ceiling	No asbestos detected	No action required
	Hotel Lobby	
Ceiling 2 samples	No asbestos detected	No action required
	Power House (near hotel)	
Main floor, straight heating return, hotel to boiler	Amosite 25-40% Chrysotile 25-40%	Good condition, cover exposed areas
Main floor, elbow	Amosite 1-10% Chrysotile 25-40%	Good condition, cover exposed areas

Main floor-straight, heating, boiler to hotel	Amosite 25-40% Chrysotile 25-40%	Good condition, cover exposed areas
Main floor-domestic hot water straight	Chrysotile 10-20%	Good condition, cover exposed areas
Main floor-domestic hot water straight, small pipe	Chrysotile 10-20%	Good condition, cover exposed areas
Main floor, boiler	Amosite 25-40% Chrysotile 25-40%	Good condition, cover exposed areas
Downstairs, hot water storage tank	Amosite 25-40% Chrysotile 25-40%	Good condition, cover exposed areas
Black pipe, joint insulation next to gauge	Chrysotile 15-25%	Poor condition, cover exposed area or remove
	Dormitory	
Pipe insulation on pipes at the end of the utilidor tunnel from powerhouse	Amosite 25-40% Chrysotile 25-40%	Good condition, cover exposed ends
	Toklat	
"Silver bullet" transite board behind stove	Chrysotile 40-50%	Label with asbestos warning
Cook shack, transite board in water heater closet	Chrysotile 40-50%	Label with asbestos warning
Shop, air compressor sleeve	Chrysotile 50-60%	Replace with asbestos substitute