



**NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF QUALITY ASSURANCE
ENVIRONMENTAL LABORATORY CERTIFICATION PROGRAM
ON-SITE LABORATORY EVALUATION
ASBESTOS PROCEDURES**

Asbestos Fibers Analysis -- Phase Contrast Microscope (PCM)

Method(s): NIOSH 7400

Laboratory ID	
Laboratory Name	
Address	
Phone	
Lab Manager/Supervisor	
QA Officer	
Analyst(s)	
Auditor	
Date(s) of Audit	
Type of Audit	<input type="checkbox"/> Initial <input type="checkbox"/> Biennial <input type="checkbox"/> Special <input type="checkbox"/> ELCP <input type="checkbox"/> TNI/NELAP
Notes:	

Question	Reference	Yes	No	N/A	Comments
Analytical Method & SOP					
Does the laboratory maintain an SOP for this accredited analyte or method?	TNI V1M2 4.2.8.5(e)				
Do the SOPs refer to the method as certified or applied?	TNI V1M2 4.2.8.5				
Is the SOP complete and acceptable?	TNI V1M2 4.2.8.5				
On the SOP, does it clearly indicate the effective date of the document, revision number, and signature(s) of approving authority?	TNI V1M2 4.2.8.5(c)				
Are all relevant SOPs readily available to all personnel?	TNI V1M2 4.2.8.5(b)				
Sample Control					
Is the laboratory involved in sampling? (If not, the skip next two questions)					
Does the laboratory provide necessary sampling equipment and/or supplies to its clients?	TNI V1M2 5.5.1				
Does the laboratory have a sampling plan and procedures for sampling?	TNI V1M2 5.7.1				
Are three-piece filter cassettes, 25-mm size, with 50-mm electrically conductive extension cowl used for sampling?	NIOSH 7400 Equipment 1				
Are sample filters used that have a cellulose ester membranes with a pore size of 0.45- to 1.2- μ m and back-up pad?	NIOSH 7400 Equipment 1				
Is each personal sampling pump calibrated with a representative sampler in line? Is a record of maintenance kept?	TNI V1M2 5.5.5				
Does the laboratory have a procedure for chain of custody (COC) of samples?	TNI V1M2 5.8.8				
Does the laboratory maintain a COC form for each sample?	TNI V1M2 5.8.7.5				
Does the laboratory have a policy to not accept air filters when shipped with bulk samples?	TNI V1M2 5.8				
Does the laboratory utilize a permanent chronological record to document receipt of all sample containers (e.g., LIMS database)?	TNI V1M2 5.8.7.3				
Does the laboratory assign a unique laboratory ID code to each sample, which is linked to its field ID code?	TNI V1M2 5.8.7.3(b)i				
Does the laboratory assign unique ID extension to subsamples? (applies primarily to bulk samples)	TNI V1M2 5.8.5(a)				
Standards and Reagents					
Are all reagents used analytical reagent grade or better?	TNI V1M3 1.7.6.1(d)				
Are the containers marked with	TNI V1M2				

Question	Reference	Yes	No	N/A	Comments
expiration date(s)?	5.6.4.2				
Is there a source of fiber-free water that is checked daily and a record kept?					
Laboratory Environment					
Does the facility have a clean room with no asbestos-containing materials and work surfaces that are stainless-steel or plastic-laminate?	TNI V1M2 5.3				
Is there a working fume hood with HEPA filter?	TNI V1M2 5.3				
Does the room operate under positive pressure?	TNI V1M2 5.3				
Does the laboratory have procedures to minimize cross-contamination?	TNI V1M3 1.7.8.2				
Are glass slides (25- x 75-mm) and cover slips (22- x 22-mm) available and free of dust and fibers?	NIOSH 7400 Equipment				
Are tools such as a knife (surgical steel), scalpel, and tweezers available?	NIOSH 7400 Equipment				
Are micropipettes and pipette tips available?	NIOSH 7400 Equipment 11				
Are the micropipettes calibrated quarterly?	TNI V1M2 5.5.13.1(e)				
Phase Contrast Microscope					
Is there a positive phase (dark) contrast microscope (PCM) with a green or blue filter available for use?	NIOSH 7400 Equipment 12				Make/Model/Serial number
Is the PCM in good working condition?					
Does the laboratory have more than one PCM?					
Does the eye piece provide 8 to 10x mag. and phase objective piece provide 40 to 45x mag., for a total magnification of 400x?	NIOSH 7400 Equipment 12				
Is the numerical aperture equal to 0.65 to 0.75?	NIOSH 7400 Equipment 12				
Is a Walton-Beckett type, 100- μ m dia., graticule available?	NIOSH 7400 Equipment 13				
Is a telescope with ocular phase-ring centering available?	NIOSH 7400 Equipment 15				
Is there a stage micrometer with 0.01 mm subdivisions?	NIOSH 7400 Equipment 16				
Is PCM equipped with a camera?					Digital or film?
Is there a maintenance log book for equipment?					
PCM Calibration					
Are all calibrations performed under the same analytical conditions used for	TNI V1M3 1.7.1.1.1				

Question	Reference	Yes	No	N/A	Comments
routine asbestos analysis and recorded including data and analyst's signature?					
At least once daily, does an analyst use the telescope ocular (or Bertrand lens) supplied by the manufacturer to ensure that the phase rings are concentric?	TNI V1M3 1.7.1.2.1				
Is the phase-shift detection limit of the microscope checked monthly or after modification or relocation using an HSE/NPL phase-contrast test slide for each analyst/microscope combination?	TNI V1M3 1.7.1.2.2				
Is the diameter of the Walton-Becket graticule specified?	TNI V1M3 1.7.1.2.3				
Is the actual field area measured, documented, and used? (acceptable range for field area is 0.00754 to 0.00817 mm ²)	TNI V1M3 1.7.1.2.3				
Is the illumination of the PCM satisfactory?	NIOSH 7400				
Is a logbook kept with the dates of microscope cleanings and major servicing?	NIOSH 7400 Calibration and QC 10				
Air Filter					
Are representative filters analyzed before use to determine filter background? If there are > 5 fibers/100 fields, are the filters discarded?	NIOSH 7402 Equipment 1				
Is each personal sampling pump calibrated?	NIOSH 7402 Sampling 1				
Is there a calibration certificate for the air pump(s)?	TNI V1M2 5.5.5				
Is the flow rate documented on the COC?	TNI V1M2 5.7.3				
Were samples taken at 0.5-16 L/min?	NIOSH 7402 Sampling 4				
Are at least 2 field blanks (or 10% of total samples) submitted for each set of samples?					
Are photos taken of standard patterns for comparison to unknowns?					
Sample Preparation & Analysis					
Is about 25% of the filter placed on a slide and placed into a "hot block" at 70°C injected with acetone to mount sample?	NIOSH 7400 Sample Prep 9				
Is each slide labeled with lab sample ID number?	TNI V1M2 5.8.7.3(b)i				
Is triacetin added to the filter then covered by a cover slip?	NIOSH 7400 Sample Prep 9c				
Are cover slips sealed with lacquer or nail polish?	NIOSH 7400 Sample Prep 9e				

Question	Reference	Yes	No	N/A	Comments
Sample Analysis					
Are only fibers longer than 5 µm with a length-to-width ratio ≥ 3:1 counted?	NIOSH 7400 Measurement 18a				
If fiber is not entirely within graticule area, is it counted as a ½ fiber?	NIOSH 7400 Measurement 18b1				
Are bundles of fibers counted as one fiber unless individual fibers can be identified by observing both ends of the fiber?	NIOSH 7400 Measurement 18c				
Does the analyst count enough fields to yield 100 fibers? (minimum 20 fields, maximum 100 fields)	NIOSH 7400 Measurement 18d				
Is counting performed at least 1 mm from the filter's edge?	NIOSH 7400 Measurement 19				
Does the analyst spend a minimum counting time of 15 s per field?	NIOSH 7400 Measurement 19				
Does the analyst use a data sheet to document the results?	NIOSH 7400 Measurement 19				
Demonstration of Capability (DOC)					
Has the laboratory conducted an initial DOC prior to using any method and at any time there is a change in instrument type, personnel, or method or any time it hasn't been performed in a 12 month period?	TNI V1M3 1.6.2				
Does the laboratory have a documented procedure for on-going DOC?	TNI V1M3 1.6.3				
Quality Control					
Is a set of reference slides maintained and remain in the custody of the QA officer? Are the labels changed periodically?	NIOSH 7400 Calibration and QC 11a				
Is a minimum of one reference slide by each counter/analyst?	NIOSH 7400 Calibration and QC 11a				
Are blind repeat counts on reference slides used to estimate the laboratory intra- and intercounter precision?	NIOSH 7400 Calibration and QC 11b				
Are field blanks prepared and counted along with the field samples? If a field blank yields greater than 7 fibers per 100 graticule fields, is possible contamination reported?	NIOSH 7400 Calibration and QC 12				
Are blind recounts performed by the same counter on 10% of filters counted?	NIOSH 7400 Calibration and QC 13				
Does the laboratory participate in a PT program, such as AIHA or ELAP, NY?	NIOSH 7400 Calibration and QC 15				
Does the laboratory analyze two field	TNI V1M3				

Question	Reference	Yes	No	N/A	Comments
blanks, or 10% of the total samples, at minimum?	1.7.2.1.2				
Does the laboratory participate in round robin testing at least once every six months?	TNI V1M3 1.7.3.2(b)				
Proficiency Testing (PT)					
Does the laboratory participate in the appropriate field of proficiency testing (FoPT) for initial and continued accreditation?	TNI V1M1 4.0				
Is PT analyses <i>not</i> contracted out to another laboratory?	TNI V1M1 5.1.2				
Does the laboratory analyze PT sample in the same manner as used for routine environmental samples?	TNI V1M1 5.1.1				
Are there previously analyzed and statistically validated PT sample records available?	TNI V1M1 5.3				
Do all the analysts participate in all PT rounds?	TNI V1M1 5.1.1				
Who is the PT provider (PTP)?					
Does the laboratory report results for accreditation and experimental FoPTs to the PTP on or before the closing date of the study?	TNI V1M1 5.2.2				
Does the laboratory have plans for resolving analytical problems when it receives a "not acceptable" performance score from a PTP?	TNI V1M1 6.1				
Are PT results used to verify accuracy and precision for each analyst and to judge the analyst's overall performance?					
Reports					
Are the reports complete and accurate?	TNI V1M2 5.10.2				
Are there any data qualifiers on reports?	TNI V1M2 5.10.2(g)				
Does the report have authorized signatures?	TNI V1M2 5.10.2(j)				
Is the following information included in the report of water samples: a) Counts per field b) Total fibers counted c) Total fields counted d) Average fiber count per graticule field e) Mean field blank count per graticule field f) Fiber density on the filter (fibers/mm ²) g) Concentration of fibers (fibers/cc) in the air volume	NIOSH 7400 Calculations and Reporting of Results				

Question	Reference	Yes	No	N/A	Comments
sampled (L) h) Intralaboratory and interlaboratory relative standard deviations i) Filter ID number j) Analyst's name k) Date of analysis l) Comments					
Is the model and manufacturer of the PCM system included in the report?	Optional				
Records					
Does the laboratory establish and maintain procedures for identification, collection, indexing, access, filing, storage, maintenance and disposal of quality and technical records?	TNI V1M2 4.13.1.1				
Do quality records include reports from internal audits and management reviews and records of corrective and preventive actions?	TNI V1M2 4.13.1.1				
Does the laboratory retain records concerning analyses including raw data records, quality control data records, chain-of-custody forms, and laboratory reports for at least five years?	N.J.A.C. 7:18-4.6, 5.6, 6.7, 8.5(a)				