

U.S. Department of Labor

Office of Workers' Compensation Programs  
Division of Energy Employees Occupational  
Illness Compensation  
Washington, DC 20210



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Subject: Update to Federal (EEOICPA) Procedure Manual, Version 4.3 (v4.3): Exhibit 15-4, Exposure and Causation Presumptions with Development Guidance for Certain Conditions.

Background: The Division of Energy Employees Occupational Illness Compensation (DEEOIC) continues to improve staff guidance regarding updates to Exhibit 15-4, Exposure and Causation Presumptions with Development Guidance for Certain Conditions, of the Federal (EEOICPA) Procedure Manual (v4.3). As part of this effort, DEEOIC is issuing a new Exhibit 15-4 to reflect additional labor categories with significant exposure to asbestos based on their job tasks, and to modify exposure criteria for the presumptive standard for non-Hodgkin's lymphoma linked to lindane (1,2,3,4,5,6-Hexachlorocyclohexane).

References: Federal (EEOICPA) Procedure Manual (v4.3).

Purpose: To provide an update to Exhibit 15-4, Exposure and Causation Presumptions with Development Guidance for Certain Conditions, of the Federal (EEOICPA) Procedure Manual (v4.3).

Applicability: All staff.

Actions:

1. DEEOIC claims staff are to cease using Exhibit 15-4, Exposure and Causation Presumptions with Development Guidance for Certain Conditions, referenced in EEOICPA Bulletin 20-08. This bulletin provides a new version of Exhibit 15-4, Exposure and Causation

Presumptions with Development Guidance for Certain Conditions. DEEOIC staff are to replace the prior version, in its entirety, with the updated Exhibit 15-4 included with this Bulletin (Attachment 1).

Disposition: Retain until incorporated in the Federal (EEOICPA) Procedure Manual.

RACHEL D. POND  
Director, Division of Energy Employees  
Occupational Illness Compensation

Attachment 1: Exhibit 15-4, Exposure and Causation Presumptions with Development Guidance for Certain Conditions.

Distribution List No. 1: Claims Examiners, Supervisory Claims Examiners, Technical Assistants, Customer Service Representatives, Fiscal Officers, FAB District Managers, Operation Chiefs, Hearing Representatives, and District Office Mail and File Sections

**Exposure and Causation Presumptions with  
Development Guidance for Certain Conditions**

1. **Angiosarcoma:** Part E causation can be presumed for angiosarcoma, also known as hemangiosarcoma, of the liver once all of the following criteria have been satisfied. If the case does not meet the causation presumption as stated below but does have some indicators of polyvinyl chloride exposure and a diagnosis of angiosarcoma/ hemangiosarcoma of the liver, development is to include an IH referral on nature, extent and duration of exposure to polyvinyl chloride (e.g. an exposure presumption does not exist) and a medical opinion on causation.
  - a. **Medical:** The file contains a diagnosis of angiosarcoma/hemangiosarcoma of the liver.
  - b. **Exposure:** The employee must have been employed for an aggregate of 250 days in a position that would have had significant polyvinyl chloride exposure. This can be determined by an IH assessment.
  - c. **Latency:** The diagnosis of angiosarcoma/hemangiosarcoma of the liver was made at least 20 years after initial exposure to polyvinyl chloride in covered employment.
  
2. **Aplastic Anemia:** Aplastic anemia may be associated with ionizing radiation and if a claim is presented for this condition, the CE considers the following.
  - a. **Medical:** The medical evidence establishes a diagnosis of aplastic anemia, ICD-9/ICD-10 code 284.89/D61.89.
  - b. **Exposure:** The level of radiation needed to have a causal relationship is 125 rem. This would be a documented accident or event indicating high or accidental radiation exposure.
  - c. **Latency period:** The latency period usually associated with the event or exposure and the onset of the condition is 6 months or less.
  - d. **Causation and other considerations:** If an employee has been diagnosed with aplastic anemia and there is evidence that an incident or accident took place within the medical, dosimetry, or incident reports, the case will be referred to the National Office Health Physicist for a review and causation determination. If the case does not present with the appropriate documentation to suggest high levels of occupational radiation, the CE reviews the case as a possible consequential illness if the employee has been treated with radiation therapy for an accepted cancer since radiation treatment associated with cancer can produce the level of radiation needed.
  
3. **Asbestos (exposure presumption):** The program recognizes that asbestos is a toxic material that was present in all Department of Energy (DOE) facility locations. The CE may accept the following presumptions regarding asbestos exposure when applicable to the medical condition under adjudication.

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a. Asbestos exposure through December 31, 1995.

(1) CE is to consider the following labor categories to have had significant exposure to asbestos based on their job tasks.

- Automotive mechanic; Vehicle mechanic; Vehicle maintenance mechanic
- Boilermaker
- Carpenter; Drywaller; Plasterer
- Demolition technician; Laborer
- Electrical mechanic; Electrician; Floor covering worker
- Firefighters and Supervisors of Firefighters
- Furnace & saw operator; Furnace builder; Furnace operator; Furnace puller; Furnace technician; Furnace tender; Furnace unloader
- Glazier; Glass installer; Glazer
- Grinder operator; Mason (concrete grinding); Tool grinder; Maintenance mechanic (general grinding); Welder (general grinding); Machinist (machine grinding)
- Heating, Ventilation, and Air Conditioning (HVAC) Mechanics, Installers, and Repairer
- Insulation worker; Insulation trade worker; Insulator
- Ironworker; Ironworker-rigger
- Maintenance mechanic; Electrician; Insulator;
- Mason; Brick & tile mason; Concrete and terrazzo worker; Bricklayer, Tile setter
- Millwright
- Heavy equipment operator; Operating Engineer
- Painter
- Pipefitter, Plumber steamfitter; Plumber/pipefitter; Plumbing & pipefitting mechanic; Plumbing technician, Steamfitter
- Precision Instrument and Equipment Repairers
- Roofer
- Sheet metal mechanic; Sheet metal fabricator/installer
- Stationary Engineers
- Welder; Welder burner; Welder mechanic
- Uranium Miner/Miller

b. For employment that does not qualify for the standard in “a.”, the CE will assume the employee to have had some level of exposure to asbestos. However, the CE is to refer the case to an IH to determine the level, extent, nature and frequency of exposure; including whether the exposure was significant (high, moderate, or low) or not significant (incidental – occurring in passing only).

**4. Asbestosis:** Part E causation can be presumed for asbestosis once all of the following criteria have been satisfied. If the case does not meet the causation presumption as stated below but the case involves a diagnosis of asbestosis, the CE develops the case through use of an IH referral if appropriate (e.g. there are no established exposure presumptions) and by obtaining a medical opinion on causation.

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- a. **Medical:** A medical diagnosis of asbestosis.
  - b. **Exposure:** The employee must have been employed for an aggregate of 250 days in a position that would have had significant asbestos exposure. This can be determined by existing asbestos exposure presumptions or an IH assessment.
  - c. **Latency:** The diagnosis of asbestosis was made at least 10 years after initial exposure to asbestos in covered employment.

**5. Asthma:** Work-related asthma includes: a) occupational asthma; or new onset asthma that is initiated by an occupational agent, and b) work-exacerbated asthma, which is established asthma that is worsened by work place exposures. The CE does not apply a toxic substance exposure assessment to a claim for work-related asthma, including the application of the SEM or IH referral process, because any dust, vapor, gas or fume has the potential to affect asthma. Given the scope of potential occupational triggers that can affect asthma, the CE relies exclusively on the assessment of the medical evidence by a qualified physician to arrive at a determination of compensability. The criteria for accepting a Part E claim for asthma are:

- a. The employee has a period of covered Part E contractor or subcontractor employment.
- b. A medical diagnosis for asthma should be made when the physician is able to identify the presence of intermittent respiratory and physiologic evidence of reversible or variable airways obstruction including post-bronchodilator reversibility on spirometry or positive methacholine challenge test. However, a physician can also rely on other clinical information to substantiate his or her diagnosis of asthma, such as the findings from a detailed medical history any physical examination. Documentation of recurrent symptoms of airflow obstruction of airway hyperresponsiveness, such as episodic cough, chest tightness or shortness of breath, or symptomatic improvement following treatment for asthma (e.g. inhaled bronchodilator or steroids) supports a diagnosis of asthma. Physical examination findings such as wheezing, nasal swelling and drainage, or use of chest muscles to breath also support a diagnosis of asthma. The response to inhaled bronchodilator administration has also been used as a measure of airway hyperresponsiveness. A 12% improvement in FEV1 of at least 200 mL after inhaled bronchodilator is how the American thoracic Society defines a significant improvement of hyperresponsive airways. However, a negative bronchodilator test does not rule out a diagnosis of asthma, especially if the patient is on medical treatment for asthma.
- c. Once having established covered Part E contractor or subcontractor employment and a diagnosis of asthma, the following criteria are available to demonstrate that the employee has work related asthma (as defined above):
  - (1) A qualified physician, who during a period contemporaneous with the period of covered Part E employment, diagnosed the employee with work-related asthma or;
  - (2) After a period of covered employment, a qualified physician conducts an examination of either the patient or available medical records and he or she concludes that the evidence supports that the employee had asthma and that an occupational exposure to a toxic substance was at least as likely as not a significant factor in

causing, contributing to or aggravating the condition. The qualified physician must provide a well-rationalized explanation for this conclusion that identifies the toxic substance(s) that likely caused, contributed to, or aggravated the diagnosed asthma. A physician's opinion that does not provide a clear basis for diagnosing asthma at the time of covered employment or the physician provides a vague or generalized opinion regarding the relationship between asthma and occupational toxic substance exposure will require additional development including the CE's request for the physician to offer further support of the claim. If the CE is unable to obtain the necessary medical evidence from the treating physician to substantiate the claim for work-related asthma, the CE will need to seek an opinion from a CMC. If a CMC referral is required, the CE will need to provide the CMC with the relevant medical evidence from the claim file and provide a detailed description of the employee's covered employment which must include each covered worksite, dates of covered employment, labor categories, and details about the jobs performed.

**6. Bladder Cancer:** Bladder cancer is associated with the toxic substances noted below. If a claim is presented for this condition, the CE considers the following

- a. Medical: The diagnosis of bladder cancer has been established by the medical evidence.
- b. Exposure: The minimum exposure associated with increased cancer risk is a full working year. The CE may consider the following when determining likely exposure.
  - (1) Direct Black: This substance was used at DOE in limited research and laboratory activities.
  - (2) MOCA: This substance is typically associated with explosives work and with plastics, adhesives and epoxy preparation.
  - (3) Benzo(a)pyrene: This substance was used extensively at the Lovelace Respiratory Research Institute for various inhalation studies; therefore, those involved in research work at this institute can be assumed to have had significant exposure. Other jobs and work processes that may be associated with this exposure are roofing, paving, firefighter training and sheet metal fabrication.
  - (4) O-Toluidine: This substance is used in various laboratory activities.
  - (5) Benzidine: This substance has been used at DOE sites for activities associated with painting, predominantly used in the production of dyes. Benzidine can be absorbed into the body by inhalation, skin absorption, ingestion, and skin and/or eye contact. In 1973, OSHA regulations effectively banned United States production of benzidine, and it has not been produced for commercial sale in the United States since 1974; however, benzidine can be imported and small amounts are still used to make benzidine-based dyes.

- c. **Causation:** For those employees who were employed consecutively for a full working year in a position that would have involved significant exposure to one of the toxins identified in (b)(1-5) (as opined by an Industrial Hygienist), causation is presumed.

7. **Chronic Obstructive Pulmonary Disease (COPD):** Part E causation can be assumed if all of the following criteria have been met.

- a. **Medical:** The diagnosis of COPD has been established by the medical evidence.
- b. **Employment/Exposure:** The employee must have been employed for an aggregate of 20 years in a position that would have had significant levels of asbestos exposure. This can be accomplished by the following two ways:
- (1) The employee was employed in any of the labor categories that are listed in Exhibit 15-4.3a(1) for an aggregate of 20 years prior to and including December 31, 1995.
  - (2) An IH has provided a well-rationalized discussion of case-specific evidence opining an employee has had 20 years of significant asbestos exposure during any time period.
- c. **Latency:** The diagnosis of COPD was made after at least 20 years after initial exposure to asbestos in covered employment.

8. **Hearing Loss:** The Part E causation standard for hearing loss can be satisfied if the three following criteria (a, b and c) are satisfied:

- a. **Medical:** The file contains a diagnosis of bilateral sensorineural hearing loss (conductive hearing loss is not known to be linked to toxic substance exposure).
- b. **Employment:** The verified covered employment must be within at least one specified job category listed below (or any combination thereof) for a period of 10 consecutive years, completed prior to 1990. The labor categories are the following:
- Boilermaker
  - Chemical Operator
  - Chemist
  - Electrician/Electrical Maintenance/Lineman
  - Electroplater/Electroplating Technician
  - Garage/Auto/Equipment Mechanic
  - Guard/Security Officer/Security Patrol Officer (i.e., firearm cleaning activities)
  - Instrument Mechanic/ Instrument Technician
  - Janitor
  - Laboratory Analyst/Aide
  - Laboratory Technician/Technologist
  - Lubricator
  - Machinist

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- Maintenance Mechanic
  - Millwright
  - Operator (most any industrial kind, the test being whether the operator position is one in which there is potential for solvent exposure)
  - Painter
  - Pipefitter
  - Printer/Reproduction clerk
  - Refrigeration Mechanic/HVAC Mechanic
  - Sheet Metal Worker
  - Utility Operator

Employees often present evidence that they were in a labor category that is the “equivalent” of one of those listed here. When a claimant makes a claim that a job the employee performed is synonymous to one of the qualifying labor categories listed above, and a CE conducted SEM labor category alias search does not provide assistive information, the CE can seek assistance in evaluating the claim by taking one of two actions.

(1) Referral to the SEM mailbox. The SEM team has access to site documentation that can assist in making determinations of equivalency, **or**

(2) Submission of an IH referral. After a review of the evidence submitted and through the use of their expert knowledge of industrial processes, an IH can opine whether jobs are equivalents.

In a case in which a finding of equivalency is established, DEEOIC staff may not use a finding in one case as a generalization for use in other claims, because of the variability of job tasks and labor categories across the DOE complex during the history of atomic weapons production.

c. Exposure: Evidence in the file must not only establish that the employee worked within a certain job category listed above, but that the employee was concurrently exposed to at least one of the specified organic solvents listed below:

- Carbon Disulfide
- Ethyl Benzene
- Methyl Ethyl Ketone
- Methyl Isobutyl Ketone
- N-hexane
- Styrene
- Toluene
- Trichloroethylene
- Xylene

In addition to thoroughly reviewing records from the case file to establish such exposure, the CE can also use SEM to identify the employee’s potential exposure to one or more of the listed toxic substances during employment in one of the qualifying labor categories (prior to 1990). The CE must carefully screen the evidence to apply appropriate SEM search filters that correlate to the employee’s work history, including labor category, work process or site/area filters. With a well-



designed SEM search that correlates to the employee's work history in a qualifying labor category, any identified potential exposure to one of the noted toxins above is sufficient for the CE to accept for application in the hearing loss standard. The CE must make a similar finding separately for each labor category in which the employee worked for the continuous 10-year period prior to 1990. When necessary, the CE may also consult with a DEEOIC Industrial Hygienist to obtain assistance in determining if the evidence establishes the employee's exposure to one or more of the necessary toxic substances.

d. **Challenges to the DEEOIC Standard.** This standard described in this section represents the sole evidentiary basis a CE is to use in making a decision concerning whether it is "at least as likely as not" that an occupational exposure to a toxic substance was a significant factor in aggravating, contributing to or causing a diagnosed bilateral sensorineural hearing loss. Claims filed for hearing loss that do not satisfy the standard outlined in this section cannot be accepted, because it represents the only scientific basis for establishing work-related hearing loss due to exposure to a toxic substance. As is usual for all claims, the CE is to undertake development on any hearing loss claim that does not meet the criteria described in this procedure, which entails communicating to the claimant the evidence necessary to meet the standard (medical+employment+exposure). As part of that development, the CE is to notify the claimant of his or her ability to challenge the scientific underpinnings of the DEEOIC hearing loss standard.

If the claimant wants to challenge one or more of the criteria of the standard, the claimant has the burden of establishing, through the submission of probative scientific evidence, that the criteria used by the program do not represent a reasonable consensus drawn from the body of available scientific data. If a claimant seeks to argue that the standard is not based on a correct interpretation of available scientific evidence, or that a toxic substance that is not listed as having a health effect of hearing loss exists, he or she will need to provide probative epidemiological data to support the claim. At a minimum, the claimant must produce epidemiological evidence (medical health science journals, articles, periodicals or other peer-reviewed publications) that specifically identifies or references a toxic substance, as defined by DEEOIC's regulations, which the evidence describes as having a health effect of bilateral sensorineural hearing loss. If the entire published article(s) are not provided, then the citation(s) must include: Journal Name, Author Last Name, Year Article Published, Title of Article, Volume (#) and Pages (#-#). Upon receipt of such evidence, the CE may refer the matter to the National Office Medical Health Science Unit for evaluation. The CE does not need to refer to the National Office cases where claim submissions do not present evidence that satisfies the minimal standard for consideration.

9. **Kidney Cancer:** Part E causation can be presumed for kidney cancer if all of the following criteria have been met. If the case does not meet the causation presumption as stated below but does have some indicators of TCE exposure and a diagnosis of kidney cancer, development is to include an IH referral if appropriate (e.g. an exposure presumption does not exist) and obtaining a medical opinion on causation.

a. **Medical:** A medical diagnosis of kidney cancer has been made.

b. Exposure: An employee must have been employed for 5 or more consecutive years prior to 1990 in a position that would have had significant trichloroethylene (TCE) exposure. This can be determined by an IH assessment or without the review of an IH if the employee meets all of the following employment criteria (exposure presumption):

(1) The employee was employed at one of the following facilities at which TCE use occurred extensively prior to 1990 and was most likely used for vapor degreasing and metalworking.

- Area IV of the Santa Susana Field Lab (ETEC)
- Argonne National Lab (East)
- Argonne National Lab (West)
- Brookhaven National Lab
- Dana Heavy Water Plant
- Dayton Project
- Electro Metallurgical
- Feed Materials Production Center (Fernald)
- Fermi National Accelerator Laboratory
- General Electric Company (Ohio)
- Hanford/PNNL
- High Energy Rate Forging Facility
- Idaho National Lab
- Iowa Ordnance Plant
- Kansas City Plant
- Lawrence Berkeley National Lab
- Lawrence Livermore National Lab
- Los Alamos National Lab
- Mallinckrodt Chemical Co., Destrehan Street Facility
- Mound Plant
- Nevada Test Site
- Oak Ridge GDP (K-25)
- Oak Ridge National Lab
- Paducah GDP
- Pantex Plant
- Pinellas Plant
- Portsmouth GDP
- Reduction Pilot Plant (Huntington)
- Rocky Flats Plant
- Sandia National Lab-Albuquerque
- Sandia National Lab-Livermore
- Savannah River Site
- South Albuquerque Works
- Stanford Linear Accelerator Center
- Tonopah Test Range
- Weldon Spring Plant (Mallinckrodt)
- West Valley Demonstration Project
- Y-12 Plant

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- (2) The employee worked at that facility prior to 1990.
  - (3) The employee worked in a labor category in which SEM indicates a potential for TCE exposure.
- c. Latency: The employee was diagnosed with kidney cancer 20 years after initial exposure to TCE in covered employment.

**10. Laryngeal Cancer:** Part E causation can be presumed for laryngeal cancer when all of the following criteria have been satisfied. If the case does not meet the causation presumption as stated below but the case involves a diagnosis of laryngeal cancer, development is to include an IH referral if appropriate (e.g. there are no established exposure presumptions) and obtaining a medical opinion on causation.

- a. Medical: The file contains a diagnosis of laryngeal cancer.
- b. Exposure: The employee must have been employed for an aggregate of 250 days in a position that would have had significant asbestos exposure. This can be determined by existing asbestos exposure presumptions or an IH assessment.
- c. Latency: The diagnosis of laryngeal cancer was made at least 15 years after initial exposure to asbestos in covered employment.

**11. Leukemia:** Part E causation can be presumed for leukemia when all of the following criteria have been satisfied. If the case does not meet the causation presumption as stated below but does have some indicators of benzene exposure and a diagnosis of leukemia, development is to include an IH referral if appropriate (e.g. an exposure presumption does not exist) and obtaining a medical opinion on causation.

- a. Medical: The file contains a diagnosis of leukemia. The following ICD-9/ICD-10 codes are acceptable for this presumption: 202.40-202.48/C91.40-C91.42; 203.10-203.12/C90.10-C90.12; and all of 204/C91; 205/C92; 206/C93; 207/C94; and 208/C95.
- b. Exposure: The employee must have been employed for an aggregate of 250 days in a position that would have had significant benzene exposure. This can be determined by an IH assessment.
- c. Latency: The diagnosis of leukemia was made at least 365 calendar days after initial exposure to benzene in covered employment.

**12. Lung Cancer:** Part E causation can be presumed for lung cancer when all of the following criteria have been satisfied. If the case does not meet the causation presumption as stated below but the case involves a diagnosis of lung cancer, development is to include an IH referral if appropriate (e.g. there are no established exposure presumptions) and obtaining a medical opinion on causation.

- a. Medical: The file contains a diagnosis of lung cancer.

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- b. **Exposure:** The employee must have been employed for an aggregate of 250 days in a position that would have had significant asbestos exposure. This can be determined by existing asbestos exposure presumptions or an IH assessment.
  - c. **Latency:** The diagnosis of lung cancer was made at least 15 years after initial exposure to asbestos in covered employment.

**13. Meningioma:** Causation is presumed for those cases in which the employee is found to have received a dose of ionizing radiation at levels equal to or greater than 1 sievert (SV), but not below 1 SV. A review by a National Office health physicist is required to determine whether the radiation threshold has been satisfied.

- a. **Medical:** The file contains a diagnosis of meningioma.
- b. **Exposure:** A national office health physicist review is required in these cases to determine radiological exposure.

**14. Mesothelioma:** Part E causation can be presumed for mesothelioma once all of the following criteria have been satisfied. If the case does not meet the causation presumption as stated below but the case involves a diagnosis of mesothelioma, development is to include an IH referral if appropriate (e.g. there are no established exposure presumptions) and obtaining a medical opinion on causation.

- a. **Medical:** The file contains a diagnosis of mesothelioma.
- b. **Exposure:** The employee was employed in a job that would have brought the employee into contact with significant exposure to asbestos for at least 30 aggregate work days. This can be determined by existing asbestos exposure presumptions or an IH assessment.
- c. **Latency:** The diagnosis of mesothelioma was made at least 15 years after initial exposure to asbestos in covered employment.

**15. Non-Hodgkin's Lymphoma:** Part E causation can be presumed for non-Hodgkin's lymphoma when all (a-c) of the following criteria have been satisfied:

- a. **Medical:** The file contains a diagnosis of non-Hodgkin's lymphoma.
- b. **Exposure:** The employee must have been employed for at least 56 days in a position that would have had significant lindane (1,2,3,4,5,6-Hexachlorocyclohexane) exposure.

or

The employee was employed for an aggregate of 2 years in a position that would have had significant pentachlorophenol exposure.

- c. **Latency:** For exposure to lindane, the diagnosis of non-Hodgkin's lymphoma was made at least 20 years after initial exposure to lindane (1,2,3,4,5,6-Hexachlorocyclohexane) in covered employment. Additionally, it is worth noting that, "experience from studies of cancer in humans

indicates that the period from first exposure to the development of cancer is sometimes longer than 20 years.”

For exposure to pentachlorophenol, the diagnosis of non-Hodgkin’s lymphoma was made at least 10 years after initial exposure to pentachlorophenol in covered employment.

**16. Ovarian Cancer:** Part E causation can be presumed for ovarian cancer when all of the following criteria have been satisfied. If the case does not meet the causation presumption as stated below but the case involves a diagnosis of ovarian cancer, development is to include an IH referral if appropriate (e.g. there are no established exposure presumptions) and obtaining a medical opinion on causation.

- a. Medical: A medical diagnosis of ovarian cancer has been made.
- b. Exposure: The employee must have been employed for an aggregate of 250 days in a position that would have had significant asbestos exposure. This can be determined by existing asbestos exposure presumptions or an IH assessment.
- c. Latency: The diagnosis of ovarian cancer was made at least 15 years after initial exposure to asbestos in covered employment.

**17. Parkinsonism:** Parkinsonism may be associated with toxic exposure. The CE develops claims for Parkinsonism, Parkinson’s disease (PD), Paralysis Agitans, and Hemiparkinsonism in the same manner. The CE performs a SEM search using available guidance and uses the health effect of “Parkinsonism” for any claim identifying Parkinsonism, PD, or any reasonable alias. SEM identifies the toxic substances currently linked to this condition. Part E causation can be presumed for “Parkinsonism” if all of the following criteria have been satisfied. If the case does not meet the causation presumption as stated below but does have some indicators of exposure to a toxic substance associated with “Parkinsonism” and a diagnosis of Parkinsonism, Parkinson’s disease (PD) and any reasonable alias, development is to include an IH referral if appropriate (e.g. there are no established exposure presumptions) and obtaining a medical opinion on causation.

- a. Medical: The file contains a diagnosis of Parkinsonism, or an acceptable alias.
- b. Exposure: There is evidence of an acute occupational exposure to carbon monoxide (CO) that precedes the onset of “Parkinsonism.” To establish such exposure, the CE requests or reviews the file for contemporaneous evidence of an incident requiring medical intervention that fits one of the following criteria:
  - (1) An incident involving acute occupational CO exposure that caused the claimant to lose consciousness at the time of the exposure.
  - (2) A documented incident involving significant CO levels and/or exposure sufficient to either cause loss of consciousness or a reduction in oxygen which could result in brain injury. (NIOSH and OSHA consider a CO level of 1200PPM to be “immediately dangerous to life and health,” and this level would be considered evidence of a toxic level sufficient to cause loss of consciousness in an adult.)

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Documentation such as laboratory test results or other clinical records demonstrating blood gas levels consistent with a reduction of oxygen sufficient to cause injury to the brain; or admission records documenting treatment or observation arising from an occupational CO exposure. (A carboxyhemoglobin level of 20% or higher would be evidence of a blood gas level sufficient to cause brain injury.)

c. Latency: The employee was diagnosed with Parkinsonism, or an acceptable alias, following an incident of acute occupational CO exposure as described above in the exposure section.

d. Other development considerations: The CE may consider the following work processes and routes of exposure when developing a “Parkinsonism” claim.

(1) Toxic substances: 1018 Steel, Alumel, Aluminum 3S alloy, Galvanized steel, Hastelloy, Kovar, Tool steel, Uranium manganese alloy.

(a) Route of Exposure: Inhalation. Work processes:

- Heating, grinding or machining manganese or manganese alloys.
- Mining or crushing manganese alloys.
- Welding or cutting mild steel.

(2) Toxic Substance: Manganese.

(a) Routes of Exposure: Inhalation, skin.

(b) Work processes:

- Heating, grinding or machining manganese or manganese alloys.
- Mining or crushing manganese ores.
- Producing manganese metal.
- Welding or cutting manganese alloys.
- Manufacturing dry cell batteries.
- Silk-screen and other printing activities using manganese-bearing pigments.
- Painting activities using manganese-bearing pigments.

(3) Toxic Substances: Manganese II chloride, Potassium permanganate.

(a) Routes of exposure: Inhalation, skin.

(b) Work processes:

- Photographic processing.
- Chemical laboratory activities
- Production processes using chemicals containing manganese.

- Pouring chemical powders.
  - Sewer and wastewater treatment.
  - Using disinfectants.
  - Sanitizing drinking water pipes and delivery systems.
- (4) Toxic Substance: Carbon monoxide.
- (a) Routes of exposure: Inhalation.
- (b) Work processes:
- Photographic processing.
  - Chemical laboratory activities.
  - Production processes using chemicals containing manganese.
  - Pouring chemical powders.
  - Sewer and wastewater treatment.
  - Using disinfectants.
  - Sanitizing drinking water pipes and delivery systems.

**18. Pleural Plaques:** Part E causation can be presumed for pleural plaques once all of the following criteria have been satisfied. If the case does not meet the causation presumption as stated below but the case involves a diagnosis of pleural plaques, development is to include an IH referral if appropriate (e.g. there are no established exposure presumptions) and obtaining a medical opinion on causation.

- a. Medical: The file contains a diagnosis of pleural plaques.
- b. Exposure: The employee must have been employed for an aggregate of 250 days in a position that would have had significant asbestos exposure. This can be determined by existing asbestos exposure presumptions or an IH assessment.
- c. Latency: The diagnosis of pleural plaques was made at least 10 years after initial exposure to asbestos in covered employment.

**19. Radiation Induced Cataract:** Cataracts may be associated with ionizing radiation. If a claim is presented for this condition, the CE considers the following.

- a. Medical: The medical evidence establishes a diagnosis of cataracts, ICD-9/ICD-10 code 366.46/H26.8.
- b. Exposure: The level of radiation needed to have a causal relationship is 500-800 rem directed towards the lens of the eye. This would be a documented accident or event indicating high or accidental radiation exposure.
- c. Latency period: The latency period usually associated with the event or exposure and the onset of the condition is a year or less.

d. Causation and other considerations: If an employee has been diagnosed with cataracts and there is evidence that an incident or accident took place within the medical, dosimetry, or incident reports; the case will be referred to the National Office Health Physicist for a review and causation determination. If the case does not present with the appropriate documentation to suggest high levels of occupational radiation, the case is to be reviewed as a possible consequential illness if the employee has been treated with radiation therapy for an accepted cancer since radiation treatment associated with cancer can produce the level of radiation needed.

**20. Radiation Sickness (Acute)**: Acute radiation sickness may be associated with ionizing radiation. If a claim is presented for this condition, the CE considers the following.

a. Medical: The medical evidence establishes a diagnosis of radiation sickness, ICD-9/ICD-10 code 990/T66.

b. Exposure: The level of radiation needed to have a causal relationship is 100-200 rem. This would be a documented accident or event indicating high or accidental radiation exposure.

c. Latency period: The latency period usually associated with the event or exposure and the onset of the condition is two weeks or less.

d. Causation and other considerations: If an employee has been diagnosed with acute radiation sickness and there is evidence that an incident or accident took place within the medical, dosimetry, or incident reports; the case will be referred to the National Office Health Physicist for a review and causation determination. If the case does not present with the appropriate documentation to suggest high levels of occupational radiation, the case is to be reviewed as a possible consequential illness if the employee has been treated with radiation therapy for an accepted cancer since radiation treatment associated with cancer can produce the level of radiation needed.