



DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Disease Control and Prevention

[NIOSH Docket 094]

World Trade Center Health Program; Petitions 024, 042, 046, 047, 051, 056, 058, and 067—Ischemic Heart Disease; Finding of Insufficient Evidence

AGENCY: Centers for Disease Control and Prevention, Department of Health and Human Services.

ACTION: Denial of petitions for addition of a health condition.

SUMMARY: The Administrator of the World Trade Center Health Program received eight petitions (Petitions 024, 042, 046, 047, 051, 056, 058, and 067) to add conditions under the broad category of ischemic heart disease to the List of WTC-Related Health Conditions. Upon reviewing the literature, including information provided by petitioners, the Administrator has determined that there is insufficient evidence to support taking further action at this time regarding ischemic heart disease. The Administrator finds insufficient evidence exists to request a recommendation of the WTC Health Program Scientific/Technical Advisory Committee, publish a proposed rule, or publish a determination not to publish a proposed rule.

DATES: The Administrator of the WTC Health Program is denying these petitions for the addition of a health condition as of [INSERT DATE OF PUBLICATION IN *FEDERAL REGISTER*].

ADDRESSES: Visit the WTC Health Program website at <https://www.cdc.gov/wtc/received.html> to review Petitions 024, 042, 046, 047, 051, 056, 058, and 067.

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A. WTC Health Program Statutory Authority

Title I of the James Zadroga 9/11 Health and Compensation Act of 2010 (Pub. L. 111-347, as amended by Pub. L. 114-113, Pub. L. 116-59, Pub. L. 117-328, Pub. L. 118-31, and Pub. L. 119-75) added Title XXXIII to the Public Health Service (PHS) Act,¹ establishing the World Trade Center (WTC) Health Program within the Department of Health and Human Services (HHS). The WTC Health Program provides medical monitoring and treatment benefits for health conditions on the List of WTC-Related Health Conditions (List)² to eligible firefighters and related personnel; law enforcement officers; and rescue, recovery, and cleanup workers who responded to the September 11, 2001, terrorist attacks in New York City, at the Pentagon, and in Shanksville, Pennsylvania (responders). The Program also provides benefits to eligible persons who were present in the dust or dust cloud on September 11, 2001, or who worked, resided, or attended school, childcare, or adult daycare in the New York City disaster area³ (survivors).

¹ Title XXXIII of the PHS Act is codified at 42 U.S.C. 300mm to 300mm-64. Those portions of the James Zadroga 9/11 Health and Compensation Act of 2010 found in Titles II and III of Public Law 111-347 do not pertain to the WTC Health Program and are codified elsewhere.

² The List of WTC-Related Health Conditions is established in 42 U.S.C. 300mm-22(a)(3)–(4) and 300mm-32(b); additional conditions may be added through rulemaking and the complete list is provided in WTC Health Program regulations at 42 CFR 88.15.

³ See 42 U.S.C. 300mm-5(8); 42 CFR 88.1.

All references to the Administrator of the WTC Health Program (Administrator) in this document mean the Director of the National Institute for Occupational Safety and Health (NIOSH) or his designee.

In accordance with section 3312(a)(6)(B) of the PHS Act, interested parties may petition the Administrator to add a health condition to the List in 42 CFR 88.15. Within 90 days after receipt of a valid petition to add a condition to the List, the Administrator must take one of the following four actions described in section 3312(a)(6)(B) of the PHS Act and § 88.16(a)(2) of the WTC Health Program regulations: (1) request a recommendation of the STAC; (2) publish a proposed rule in the *Federal Register* to add such health condition; (3) publish in the *Federal Register* the Administrator's determination not to publish such a proposed rule and the basis for such determination; or (4) publish in the *Federal Register* a determination that insufficient evidence exists to take action under (1) through (3) above.

More information about the WTC Health Program, including the List and the petition process, is available at www.cdc.gov/wtc/.

B. Procedures for Evaluating a Petition

In addition to the regulatory provisions, the WTC Health Program has developed policies to guide the review of submissions and petitions, as well as the analysis of evidence supporting the potential addition of a non-cancer health condition to the List.

A valid petition must include sufficient medical basis for the association between the September 11, 2001, terrorist attacks and the health condition to be added. In accordance with WTC Health Program *Policy and Procedures for Handling Submissions and Petitions to Add a Health Condition to the List of WTC-Related Health Conditions*,⁴

⁴ See WTC Health Program [2026], *Policy and Procedures for Handling Submissions and Petitions to Add a Health Condition to the List of WTC-Related Health Conditions*, January 22, 2026, https://www.cdc.gov/wtc/pdfs/policies/PNP_SubmissionsPetitions%20_20260122-508.pdf.

reference to a peer-reviewed, published, epidemiologic study about the health condition among 9/11-exposed populations or to clinical case reports of health conditions in WTC responders or survivors may demonstrate the required medical basis.⁵ Studies linking 9/11 agents or hazards⁶ to the petitioned health condition may also provide sufficient medical basis for a valid petition.⁷ In accordance with 42 CFR 88.16(a)(5), the Administrator is required to consider a new petition for a previously evaluated health condition determined not to qualify for addition to the List only if the new petition presents a new medical basis for the association between 9/11 exposures and the condition to be added. A new medical basis is evidence not previously reviewed by the Administrator.

After the Program has determined that a petition is valid, and in accordance with the *Policy and Procedures for Adding Non-Cancer Conditions to the List of WTC-Related Health Conditions (Policy and Procedures)*,⁸ the Administrator directs the WTC Health Program Science Team (Science Team) to conduct a review of the scientific literature. The literature review includes a keyword search of relevant scientific databases intended to identify peer-reviewed, published, epidemiologic studies about the health condition among 9/11-exposed populations.

The Science Team evaluates the scientific quality of each peer-reviewed, published, epidemiologic study of the health condition identified in the literature search using validity indicators detailed in the *Policy and Procedures*.⁹ Studies exhibiting sufficient validity indicators have the potential to provide a basis for deciding whether to

⁵ *Id.* at 7.

⁶ 9/11 agents are chemical, physical, biological, or other hazards reported in a published, peer-reviewed exposure assessment study of responders, recovery workers, or survivors who were present in the New York City disaster area, or at the Pentagon site, or the Shanksville, Pennsylvania site, as those locations are defined in 42 CFR 88.1, as well as those hazards not identified in a published, peer-reviewed exposure assessment study, but which are reasonably assumed to have been present at any of the three sites. See WTC Health Program [2018], *Development of the Inventory of 9/11 Agents*, July 17, 2018, https://www.cdc.gov/WTC/pdfs/policies/Development_of_the_Inventory_of_9-11_Agents_20180717.pdf.

⁷ *Supra* note 4 at 7.

⁸ See WTC Health Program [2026], *Policy and Procedures for Adding Non-Cancer Conditions to the List of WTC-Related Health Conditions*, May 14, 2026, https://www.cdc.gov/wtc/pdfs/policies/WTCHP_PP_Adding_NonCancer_Health_Conditions_20260514.pdf.

⁹ *Id.* at 7.

propose adding the health condition to the List and are considered “high-quality” studies. The Science Team then evaluates the identified high-quality studies, individually and together, to characterize the evidence of a causal association between 9/11 exposures and the health condition. As part of this evaluation, the Science Team considers the Bradford Hill weight of evidence criteria,¹⁰ study limitations, and whether the studies are representative of the 9/11-exposed population of responders and survivors. After evaluating the totality of the evidence, the Science Team assesses the degree to which the evidence supports a causal association between 9/11 exposures and the health condition and assigns the evidence to one of the following five categories:

Category I	Evidence supports substantial likelihood of causal association
Category II	Evidence supports high likelihood of causal association
Category III	Evidence supports limited likelihood of causal association
Category IV	Evidence does not support causal association
Category V	Evidence is inadequate to determine the likelihood of causal association

The Science Team provides the outcome of its evaluation to the Administrator. A health condition may be added to the List if peer-reviewed, published, epidemiologic studies provide support that there is a substantial likelihood of a causal association between 9/11 exposures and the health condition (Category I).¹¹ If the evaluation of evidence provided in peer-reviewed, published, epidemiologic studies of the health condition in 9/11 populations shows a high, but not substantial, likelihood of a causal association between the 9/11 exposures and the health condition (Category II),¹² then the Administrator may consider additional highly relevant scientific evidence regarding exposures to 9/11 agents in non-9/11 exposure scenarios. If that additional assessment

¹⁰ Hill AB [1965], *The Environment and Disease: Association or Causation?* Proc R Soc Med 58(5):295–300. According to the *Policy and Procedures*, the Bradford Hill criteria are a “leading weight of evidence framework” which “comprises nine aspects of association. These aspects comprise strength of association, consistency, specificity, temporality, biological gradient, plausibility, coherence, experiment, and analogy.” See *supra* note 8 at 9–10 and discussion of Bradford Hill analysis at footnote 21.

¹¹ *Substantial likelihood of causal association* means that the association is strongly supported by evidence from high-quality, peer-reviewed, published epidemiologic studies of the health condition in 9/11-exposed populations and there is high confidence that the association cannot be explained by chance, bias, confounding, or any other alternative explanation. See *supra* note 8 at 12.

¹² *High likelihood of causal association* means that the scientific evidence, taken as a whole, demonstrates that the likelihood of a causal association is less than substantial, but definitively more than limited. Therefore, there is some meaningful likelihood that the association can be explained by chance, bias, confounding, or another alternative explanation. See *supra* note 8 at 12.

establishes that there is now sufficient evidence to support the conclusion that a causal association between the 9/11 exposures and the health condition is substantially likely among 9/11-exposed populations (Category I), then the Administrator may propose the health condition for addition to the List.

C. Petitions 024, 042, 046, 047, 051, 056, 058, and 067

Between October 2019 and September 2025, the Administrator received eight submissions determined to be valid petitions in accordance with the *Policy and Procedures for Handling Submissions and Petitions to Add a Health Condition to the List of WTC-Related Health Conditions*.¹³ The Administrator exercised his discretion to group these petitions together because they each requested the addition of health conditions falling under the broad category of ischemic heart disease (IHD), a subset of cardiovascular diseases (CVD), as discussed below. The medical basis for each petition is described below.

On October 3, 2019, the Administrator received a petition (Petition 024) requesting the addition of “cardiovascular disease, including myocardial infarction, CABG [coronary artery bypass graft] and angioplasty” to the List. The petition’s validity was established by reference to one peer-reviewed, published, epidemiologic study that demonstrates a medical basis for the association between 9/11 exposures and IHD. The following referenced study established a medical basis:

- *Long-Term Cardiovascular Disease Risk among Firefighters after the World Trade Center Disaster*, by Cohen et al. [2019],¹⁴ a peer-reviewed, published longitudinal cohort study designed to assess whether 9/11 exposures were associated with elevated CVD risk, including but not limited to myocardial infarction, stroke, unstable angina, coronary artery surgery or angioplasty, congestive heart failure, CVD death, stable angina, and cardiomyopathy in Fire Department of New York (FDNY) firefighters. The study found that positive

¹³ See Petitions 024, 042, 046, 047, 051, 056, 058, and 067, *WTC Health Program: Petitions Received*, <http://www.cdc.gov/wtc/received.html>.

¹⁴ Cohen HW, Zeig-Owens R, Joe C, Hall CB, Webber MP, Weiden MD, Cleven KL, Jaber N, Skerker M, Yip J, Schwartz T, Prezant DJ [2019], *Long-Term Cardiovascular Disease Risk among Firefighters after the World Trade Center Disaster*, *JAMA Netw Open* 2(9):e199775.

associations were observed between CVDs and 9/11 exposures related to time of arrival and length of response.

This study suggests a potential association between exposure to 9/11 agents (specifically WTC dust) and IHD and thus provided a sufficient medical basis to consider the submission a valid petition.

On January 23, 2023, the Administrator received a petition (Petition 042) requesting the addition of “cardiovascular disease” to the List. The petition’s validity was established by references to five peer-reviewed, published, epidemiologic studies that demonstrate a positive association between 9/11 exposures and IHD. The referenced studies individually establishing sufficient medical basis are as follows:

- *Injury, Intense Dust Exposure, and Chronic Disease among Survivors of the World Trade Center Terrorist Attacks on September 11, 2001*, by Alper et al. [2017],¹⁵ a peer-reviewed, published longitudinal study of WTC Health Registry enrollees who had acute exposure to WTC dust/debris or experienced a traumatic injury on September 11, 2001, and self-reported four health outcomes, including the CVDs angina/myocardial infarction. An injury sustained on September 11, 2001, is considered a 9/11 exposure; such exposures were found to be predictive of angina/myocardial infarction, but angina/myocardial infarction was not associated with intense dust cloud exposure.
- *Post-Traumatic Stress Disorder and Cardiovascular Diseases: A Cohort Study of Men and Women Involved in Cleaning the Debris of the World Trade Center Complex*, by Remch et al. [2018],¹⁶ a peer-reviewed, published longitudinal study of WTC Health Program members who were first responders on or after September 11, 2001, examining whether PTSD is a risk factor for myocardial infarction and stroke (combined). The study reported hazard ratios for several 9/11 exposure measures and myocardial infarction/stroke outcome. Some of the hazard ratios were increased and some not, but none were statistically significant after adjustment for the presence of PTSD.
- *Long-Term Cardiovascular Disease Risk among Firefighters after the World Trade Center Disaster*, by Cohen et al. [2019],¹⁷ described above.
- *Cardiovascular Disease in the World Trade Center Health Program General Responder Cohort*, by Sloan et al. [2021],¹⁸ a peer-reviewed, published

¹⁵ Alper HE, Yu S, Stellman SD, Brackbill RM [2017], *Injury, Intense Dust Exposure, and Chronic Disease among Survivors of the World Trade Center Terrorist Attacks of September 11, 2001*, *Inj Epidemiol* 4:17.

¹⁶ Remch M, Laskaris Z, Flory J, Mora-McLaughlin C, Morabia A [2018], *Post-Traumatic Stress Disorder and Cardiovascular Diseases: A Cohort Study of Men and Women Involved in Cleaning the Debris of the World Trade Center Complex*, *Circ Cardiovasc Qual Outcomes* 11(7):e004572.

¹⁷ Cohen HW, Zeig-Owens R, Joe C, Hall CB, Webber MP, Weiden MD, Cleven KL, Jaber N, Skerker M, Yip J, Schwartz T, Prezant DJ [2019], *Long-Term Cardiovascular Disease Risk among Firefighters after the World Trade Center Disaster*, *JAMA Netw Open* 2(9):e199775.

¹⁸ Sloan NL, Shapiro MZ, Sabra A, Dasaro CR, Crane MA, Harrison DJ, Luft BJ, Moline JM, Udasin IG, Todd AC, Teitelbaum SL [2021], *Cardiovascular Disease in the World Trade Center Health Program General Responder Cohort*, *Am J Ind Med* 64:97–107.

prospective cohort study designed to examine the annual and cumulative incidence of CVD, including coronary artery disease, myocardial infarction, stroke, and congestive heart failure, among the WTC Health Program general responder cohort (GRC). The study reported increased CVD risk in males and females exposed to the WTC dust cloud compared to those who were not exposed to the dust cloud (i.e., arrived on or after September 12, 2021).

- *Health Effects Following Exposure to Dust from the World Trade Center Disaster: An Update*, by Mears et al. [2022],¹⁹ is a non-systematic review study that summarized health effects arising from 9/11-related exposures, including cardiovascular effects, in WTC rescue and recovery workers and survivors of the attacks. The authors concluded that the long-term health effects, including cardiovascular effects, arising from 9/11 exposures remain unclear and that more study is needed.

These five studies suggest a potential association between exposure to 9/11 agents (injury on September 11, 2001, and WTC dust) and CVD and thus provided a sufficient medical basis to consider the submission a valid petition.

On June 15, 2023, the Administrator received a petition (Petition 046) requesting the addition of “cardiomyopathy” to the List. The petition’s validity was established by reference to the peer-reviewed, published, epidemiologic study by Cohen et al. [2019], *Long-Term Cardiovascular Disease Risk among Firefighters after the World Trade Center Disaster*, described above.

On September 3, 2023, the Administrator received a petition (Petition 047) requesting the addition of “cardiovascular diseases,” including “myocardial infarction, unstable angina, obstructive coronary artery disease, ischemic cardiomyopathy, ischemic congestive heart failure, arrhythmias (due to any of the above), stroke, and peripheral vascular disease” to the List. The petition’s validity for those health conditions grouped together by the Administrator as related to CVD was established by reference to 14 studies that provided sufficient medical basis. To ensure a comprehensive scientific evaluation of the requested health conditions—each of which are associated with a large volume of peer-reviewed, published, scientific studies—the Administrator directed the

¹⁹ Mears MJ, Aslaner DM, Barson CT, Cohen MD, Gorr MW, Wold LE [2022], *Health Effects Following Exposure to Dust from the World Trade Center Disaster: An Update*, Life Sci 289:120147.

Science Team to review the scientific evidence for the requested health conditions in three separate evaluations pertaining to conditions: (1) affecting oxygen supply to the heart (i.e., ischemia); (2) affecting blood supply to the brain (i.e., ischemic and hemorrhagic stroke); and (3) affecting the peripheral artery system.²⁰

Among the 14 studies establishing sufficient medical basis for Petition 047 were the four peer-reviewed, published, epidemiologic studies described above: *Injury, Intense Dust Exposure, and Chronic Disease among Survivors of the World Trade Center Terrorist Attacks on September 11, 2001*, by Alper et al. [2017], *Long-Term Cardiovascular Disease Risk among Firefighters after the World Trade Center Disaster*, by Cohen et al. [2019], *Post-Traumatic Stress Disorder and Cardiovascular Diseases: A Cohort Study of Men and Women Involved in Cleaning the Debris of the World Trade Center Complex*, by Remch et al. [2018], and *Cardiovascular Disease in the World Trade Center Health Program General Responder Cohort*, by Sloan et al. [2021]. The other 10 studies providing sufficient medical basis comprised 6 additional peer-reviewed, published, epidemiologic studies of cardiovascular diseases in the 9/11-exposed population, and four additional citations supporting positive associations between environmental particulates and chemicals that are considered 9/11 agents and exposure-related CVDs. These 10 studies also providing sufficient medical basis are described below:

- *Particulate Matter Air Pollution and Cardiovascular Disease: An Update to the Scientific Statement from the American Heart Association*, by Brook et al. [2010],²¹ is an updated scientific statement providing a comprehensive review of evidence linking exposure to particulate matter <2.5 micrometers in diameter (PM_{2.5}). The paper also briefly discussed other 9/11 agents such as nitrogen oxide and dioxide (NO_x), carbon monoxide (CO), and ozone (O₃), associated with CVD. The review found evidence of a causal relationship between PM_{2.5} exposures and cardiovascular disease-related morbidity and mortality.

²⁰ Stroke will be considered in a separate evaluation under a new ordinal number, Petition 048. Peripheral vascular (artery) disease will be evaluated separately under a new ordinal number as Petition 048a.

²¹ Brook RD, Rajagopalan S, Pope CA, Brook JR, Bhatnagar A, Diez-Roux AV, Holguin F, Hong Y, Luepker RV, Mittleman MA, Peters A, Siscovick D, Smith SC, Whitsel L, Kaufman JD, and on behalf of the American Heart Association Council on Epidemiology and Prevention, Council on the Kidney in Cardiovascular Disease, and Council on Nutrition, Physical Activity and Metabolism [2010], *Particulate Matter Air Pollution and Cardiovascular Disease: An Update to the Scientific Statement from the American Heart Association*, *Circulation* 121(21):2331–2378.

- *Expert Position Paper on Air Pollution and Cardiovascular Disease*, by Newby et al. [2015],²² is a consensus document that evaluated the evidence linking air pollution (comprising the 9/11 agents PM_{2.5} and PM₁₀, ozone, nitrogen dioxide [NO₂], volatile organic compounds (including benzene), carbon monoxide [CO], and sulfur dioxide [SO₂]) to CVD (i.e., coronary artery disease, heart failure, myocardial infarction, atherosclerosis, thrombosis). The authors concluded that air pollution increases the risk of CVD and related mortality, outlined potential biological mechanisms underlying this relationship and determined that air pollution should be considered a modifiable risk factor for CVD.
- *Association between Air Pollution and Coronary Artery Calcification within Six Metropolitan Areas in the USA (the Multi-Ethnic Study of Atherosclerosis and Air Pollution): A Longitudinal Cohort Study*, by Kaufman et al. [2016],²³ is a 10-year cohort study of participants in the Multi-Ethnic Study of Atherosclerosis and Air Pollution (MESA Air). This study assessed the association between long-term exposure to ambient air pollution, including the 9/11 agents PM_{2.5}, NO_x, and elemental carbon, and accelerated atherosclerosis, as demonstrated by the progression of coronary artery calcium scores which is used as a diagnostic marker for coronary artery disease risk. The study found that PM_{2.5} and NO_x, but not elemental carbon, have a strong positive association with accelerated atherosclerosis in the coronary arteries.
- *Estimates and 25-Year Trends of the Global Burden of Disease Attributable to Ambient Air Pollution: An Analysis of Data from the Global Burden of Diseases Study 2015*, by Cohen et al. [2017],²⁴ examined trends in morbidity and mortality related to ambient air pollution (PM_{2.5}) from 1990 to 2015. The authors found that ambient PM_{2.5} was the fifth-ranked risk factor for global deaths in 2015, with CVD (comprising IHD and cerebrovascular disease) accounting for most of those deaths.
- *A Joint ERS/ATS Policy Statement: What Constitutes an Adverse Health Effect of Air Pollution? An Analytical Framework*, by Thurston et al. [2017],²⁵ is a joint European Respiratory Society/American Thoracic Society policy statement on what constitutes an adverse health effect of air pollution. It provides an analytical framework for interpreting scientific evidence on the health effects of air pollution for risk management purposes. The statement provides a non-systematic review, including a review of the adverse CVD effects from exposure to PM_{2.5}.

²² Newby DE, Mannucci PM, Tell GS, Baccarelli AA, Brook RD, Donaldson K, Forastiere F, Franchini M, Franco OH, Graham I, Hoek G, Hoffmann B, Hoylaerts MF, Künzli N, Mills N, Pekkanen J, Peters A, Piepoli MF, Rajagopalan S, Storey RF, on behalf of ESC Working Group on Thrombosis, European Association for Cardiovascular Prevention and Rehabilitation and ESC Heart Failure Association [2014], *Expert Position Paper on Air Pollution and Cardiovascular Disease*, Eur Heart J 36(2):83–93.

²³ Kaufman JD, Adar SD, Barr RG, Budoff M, Burke GL, Curl CL, Daviglius ML, Diez-Roux AV, Gassett AJ, Jacobs DR, Kronmal R, Larson TV, Navas-Acien A, Olives C, Sampson PD, Sheppard L, Siscovick DS, Stein JH, Szpiro AA, Watson KE [2016], *Association between Air Pollution and Coronary Artery Calcification within Six Metropolitan Areas in the USA (the Multi-Ethnic Study of Atherosclerosis and Air Pollution): A Longitudinal Cohort Study*, The Lancet 388(10045):696–704.

²⁴ Cohen AJ, Brauer M, Burnett R, Anderson R, Frostad J, Estep K, Balakrishnan K, Brunekreef B, Dandona L, Dandona R, Feigin V, Freedman G, Hubbell B, Jobling A, Kan H, Knibbs L, Liu Y, Martin R, Morawska L, Pope A, Forouzanfar MH [2017], *Estimates and 25-Year Trends of the Global Burden of Disease Attributable to Ambient Air Pollution: An Analysis of Data from the Global Burden of Diseases Study 2015*, The Lancet 389(10082):1907–1918.

²⁵ Thurston GD, Kipen H, Annesi-Maesano I, Balme J, Brook RD, Cromar K, DeMatteis S, Forastiere F, Forsberg B, Frampton MW, Grigg J, Heederik D, Kelly FJ, Kuenzli N, Laumbach R, Peters A, Rajagopalan ST, Rich D, Ritz B, Samet JM, Sandstrom T, Sigsgaard T, Sunyer J, Brunekreef B [2017], *A Joint ERS/ATS Policy Statement: What Constitutes an Adverse Health Effect of Air Pollution? An Analytical Framework*, Eur Respir J 49(1):1600419.

- *Ambient Air Quality and Cardiovascular Health: Translation of Environmental Research for Public Health and Clinical Care*, by Cascio and Long [2018],²⁶ is a non-systematic review on the CVD effects of air pollution. The review reported that PM_{2.5} are associated with increased severity of coronary artery disease and a higher likelihood of having a myocardial infarction in the previous year.
- *Mortality among Rescue and Recovery Workers and Community Members Exposed to the September 11, 2001 World Trade Center Terrorist Attacks, 2003–2014*, by Jordan et al. [2018],²⁷ is a cohort study that evaluated heart disease mortality (i.e., rheumatic heart disease, hypertension with heart disease, IHD, chronic disease of endocardium, cardiomyopathy, conductive disorder, and other disease of the heart) occurring between 2003 and 2014 among WTC Health Registry members. The study found that higher levels of exposure to WTC dust were positively associated with heart disease in responders and survivors.
- *Integrated Science Assessment (ISA) for Particulate Matter*, by EPA’s Center for Public Health and Environmental Assessment [2019],²⁸ is a detailed integrated science assessment that examined the impact of PM, including PM_{2.5}, on various CVD outcomes. The assessment concluded that there is sufficient evidence to support a causal relationship between both short-term (hours to approximately 1 month) and long-term (1 month to years) exposure to PM_{2.5} and adverse cardiovascular outcomes, including IHD.
- *Cardiopulmonary Impact of Particulate Air Pollution in High-Risk Populations: JACC State-of-the-Art Review*, by Newman et al. [2020], is a Journal of the American College of Cardiology (JACC) state-of-the-art review of the cardiopulmonary impact of PM in high-risk populations. It recognized that air pollution, including PM_{2.5}, poses CVD risks. The authors proposed actions to reduce those CVD risks and suggested methods to study the effectiveness of those actions.
- *A 15-Year Follow-Up Study of Mortality in a Pooled Cohort of World Trade Center Rescue and Recovery Workers*, by Li et al. [2023],²⁹ a longitudinal cohort study of mortality patterns in FDNY, WTC Health Registry, and GRC responders over 15 years. The study found an elevated risk of heart disease-related mortality in GRC responders and certain Registry enrollees (i.e., those Registry enrollees who were not FDNY nor GRC members) who first experienced 9/11 exposures between September 11 and 17, 2001, compared with those who were first exposed later.

Together, the 14 peer-reviewed, published epidemiologic studies provided as medical basis demonstrate a positive association between 9/11 exposures and myocardial

²⁶ Cascio WE, Long TC [2018], *Ambient Air Quality and Cardiovascular Health: Translation of Environmental Research for Public Health and Clinical Care*, NC Med J 79(5):306–312.

²⁷ Jordan HT, Stein CR, Li J, Cone JE, Stayner L, Hadler JL, Brackbill RM, Farfel MR [2018], *Mortality among Rescue and Recovery Workers and Community Members Exposed to the September 11, 2001 World Trade Center Terrorist Attacks, 2003–2014*, Environ Res 163:270–279.

²⁸ EPA [2019], *Integrated Science Assessment (ISA) for Particulate Matter (Final Report, Dec 2019)*, EPA/600/R-19/188.

²⁹ Li J, Hall CB, Yung J, Kehm RD, Zeig-Owens R, Singh A, Cone JE, Brackbill RM, Farfel MR, Qiao B, Schymura MJ, Shapiro MZ, Dasaro CR, Todd AC, Prezant DJ, Boffetta P [2023], *A 15-Year Follow-Up Study of Mortality in a Pooled Cohort of World Trade Center Rescue and Recovery Workers*, Environ Res 219:115116.

infarction, unstable angina, obstructive coronary artery disease, ischemic cardiomyopathy, ischemic congestive heart failure, arrhythmias, and stroke in 9/11-exposed populations.

On November 1, 2023, the Administrator received a petition (Petition 051) requesting the addition of “Cardiovascular Diseases,” including “Coronary Artery Disease, Myocardial Infarction, Stroke and Congestive Heart Failure” to the List. The petition’s validity for all of the requested health conditions grouped together by the Administrator as related to CVD was established by reference to three of the peer-reviewed, published, epidemiologic studies described above: *Post-Traumatic Stress Disorder and Cardiovascular Diseases: A Cohort Study of Men and Women Involved in Cleaning the Debris of the World Trade Center Complex*, by Remch et al. [2018], *Long-Term Cardiovascular Disease Risk among Firefighters after the World Trade Center Disaster*, by Cohen et al. [2019], and *Cardiovascular Disease in the World Trade Center Health Program General Responder Cohort*, by Sloan et al. [2021]. Because stroke is not considered an IHD, the Administrator directed that it be evaluated separately.³⁰

On January 6, 2025, the Administrator received a petition (Petition 056) requesting the addition of “Coronary Artery Disease” to the List. The petition’s validity was established by reference to one of the peer-reviewed, published, epidemiologic studies described above, *Cardiovascular Disease in the World Trade Center Health Program General Responder Cohort*, by Sloan et al. [2021].

On January 31, 2025, the Administrator received a petition (Petition 058) requesting the addition of “Cardiovascular disease[,] cardiomyopathy, atrial fibrillation” to the List. The petition’s validity was established by reference to two of the peer-reviewed, published epidemiologic studies described above: *Long-Term Cardiovascular Disease Risk among Firefighters after the World Trade Center Disaster*, by Cohen et al.

³⁰ Stroke will be considered in a separate evaluation under a new ordinal number, Petition 051a.

[2019], and *Cardiovascular Disease in the World Trade Center Health Program General Responder Cohort*, by Sloan et al. [2021]. Two additional peer-reviewed, published, epidemiologic studies of CVDs in the 9/11-exposed population also provided sufficient medical basis:

- *Respiratory and Cardiovascular Hospitalizations after the World Trade Center Disaster*, by Lin et al. [2010],³¹ an ecologic study that examined the relationship between hospital admissions for respiratory and CVDs among lower Manhattan residents after September 11, 2001. CVDs included chronic rheumatic heart disease, hypertension, acute and chronic coronary artery disease, cardiac dysrhythmia, and congestive heart failure. The study found a significant increase in the rate of CVD hospitalizations during the weeks of September 18, 2001, and October 9, 2001, compared to the same weeks during the preceding 10 years, although no such increases in the rate of CVD hospitalizations were observed in several other weeks in September and October 2001.
- *Self-Reported Cardiovascular Disease in Career Firefighters with and without World Trade Center Exposure*, by Mueller et al. [2024],³² a cross-sectional study of CVD prevalence in male FDNY firefighters. The study found a positive association between self-reported CVD, including coronary artery disease, myocardial infarction, and angina when comparing firefighters with September 11, 2001, exposures and firefighters without those exposures.

On September 3, 2025, the Administrator received a petition (Petition 067) requesting the addition of “Ischemic cardiomyopathy” to the List. The petition’s validity was established by reference to one of the studies referenced above, *Respiratory and Cardiovascular Hospitalizations after the World Trade Center Disaster*, by Lin et al. [2010].

Together, the eight petitions requested the addition of and provided medical basis for adding the following CVDs to the List: myocardial infarction, coronary artery disease, cardiomyopathy, arrhythmias, congestive heart failure, and unstable angina.

Requested Ischemic Heart Diseases for which Medical Basis Was Provided	
Petition	Requested health condition
024	Cardiovascular disease, including myocardial infarction
042	Cardiovascular disease
046	Cardiomyopathy

³¹ Lin S, Gomez MI, Gensburg L, Liu W, Hwang S [2010], *Respiratory and Cardiovascular Hospitalizations after the World Trade Center Disaster*, Arch Environ Occup Health 65(1):12–20.

³² Mueller AK, Cohen H, Singh A, Webber MP, Hall CB, Prezant DJ, Zeig-Owens R [2024], *Self-Reported Cardiovascular Disease in Career Firefighters with and without World Trade Center Exposure*, JOEM 66(2):135–140.

047	Cardiovascular diseases, including myocardial infarction, unstable angina, obstructive coronary artery disease, ischemic cardiomyopathy, ischemic congestive heart failure, arrhythmias (due to any of the above)
051	Cardiovascular diseases, including coronary artery disease, myocardial infarction, congestive heart failure
056	Coronary artery disease
058	Cardiovascular disease, cardiomyopathy, atrial fibrillation
067	Ischemic cardiomyopathy

Although the terms “CABG” and “angioplasty” were requested in Petition 024, they are both treatments for health conditions and not conditions themselves. They were included in the literature search performed by the Science Team (described below) and were not considered further.

Upon review of Petitions 024, 042, 046, 047, 051, 056, 058, and 067, the Program determined that nearly all of the requested CVDs for which medical basis was provided—myocardial infarction, coronary artery disease, cardiomyopathy, arrhythmia, congestive heart failure, and unstable angina—fall under the broader category of “ischemic heart disease” within the NIOSH Life Table Analysis System (LTAS)³³ category Minor Category 055. Minor Category 55 comprises ICD-10³⁴ codes I20–I22 and I24–I25:

Classification of Minor 55, Ischemic Heart Disease	
ICD 10 code	Description
I20	Angina pectoris
I21	Acute myocardial infarction
I22	Subsequent ST elevation (STEMI) and non-ST elevation (NSTEMI) myocardial infarction
I24	Other acute ischemic heart diseases
I25	Chronic ischemic heart disease (e.g., coronary atherosclerosis, ischemic cardiomyopathy)

Arrhythmia, congestive heart failure, and atrial fibrillation are not categorized as IHDs in ICD-10 codes I20–I22 and I24–I25 but are considered “other forms of heart disease” and found under codes I47–I49 and I50. Accordingly, neither arrhythmia, congestive heart

³³ NIOSH LTAS is computer software commonly used to conduct comparisons of cause-specific incidence and mortality rates by age, sex, race, calendar time, and duration or level of exposure. LTAS support was discontinued in 2022, but its functionality was retained in software available on another platform. See Bertke SJ, Kelly-Reif K [2022], *Introducing LTASR, a New R Package Based on the NIOSH Life Table Analysis System*, *Occup Environ Med* 79(11):792.

³⁴ ICD, International Classification of Diseases, 10th Revision, <https://www.cms.gov/medicare/coding/icd10>.

failure, nor atrial fibrillation were comprehensively evaluated. The term “IHD” is used throughout this writing to refer to the requested health conditions.

D. Evaluation of Scientific Evidence: Findings and Conclusion

In response to Petitions 024, 042, 046, 047, 051, 056, 058, and 067 and pursuant to the WTC Health Program’s *Policy and Procedures*, the Administrator of the WTC Health Program directed the Science Team to conduct a literature search to identify peer-reviewed, published, epidemiologic studies of IHD in 9/11-exposed populations. Identified studies were initially assessed for quality; those studies determined to be high-quality were then evaluated to determine if they provide evidence to support a likelihood of a causal association between 9/11 exposures and the health condition under consideration. The Science Team provided the Administrator a paper describing its findings, *Evaluation of Scientific Evidence Supporting the Addition of Ischemic Heart Disease to the List of WTC-Related Health Conditions*. This paper, which builds on previous evaluations of IHD conditions conducted in response to Petitions 004 and 012, is available in the docket for this activity³⁵ and on the Program’s website.³⁶

The literature search conducted by the Science Team identified 20 peer-reviewed, published, epidemiologic studies of IHD in 9/11-exposed populations. Of those, six studies were found not to demonstrate sufficient validity indicators to be considered high-quality and were not further evaluated.³⁷ The remaining 14 studies were determined to

³⁵ <https://www.cdc.gov/niosh/docket/archive/docket094.html>.

³⁶ <https://www.cdc.gov/wtc/received.html>.

³⁷ Jordan HT, Brackbill RM, Cone JE, Debchoudhury I, Farfel MR, Greene CM, Hadler JL, Kennedy J, Li J, Liff J, Stayner L, Stellman SD [2011a], *Mortality Among Survivors of the Sept 11, 2001, World Trade Center Disaster: Results from the World Trade Center Health Registry Cohort*, *Lancet* 378(9794):879–887; Mani V, Wong SK, Sawit ST, Calcagno C, Maceda C, Ramachandran S, Fayad ZA, Moline J, McLaughlin MA [2013], *Relationship Between Particulate Matter Exposure and Atherogenic Profile in “Ground Zero” Workers as Shown by Dynamic Contrast Enhanced MR Imaging*, *Int J Cardiovasc Imaging* 29:827–833; Wanahita N, Lin See J, Giedd KN, Friedmann P, Somekh NN, Bergmann SR [2010], *No Evidence of Increased Prevalence of Premature Coronary Artery Disease in New York City Police Officers as Predicted by Coronary Artery Calcium Scoring*, *JOEM* 52(6):661–665; Stein CR, Wallenstein S, Shapiro M, Hashim D, Moline JM, Udasin I, Crane MA, Luft BJ, Lucchini RB, Holden WL [2016], *Mortality Among World Trade Center Rescue and Recovery Workers, 2002–2011*, *AJIM* 59(2):87–95; Singh A, Zeig-Owens R, Cannon M, Webber MP, Goldfarb DG, Daniels RD, Prezant DJ, Boffetta P, Hall CB [2023], *All-Cause and Cause-Specific Mortality in a Cohort of WTC-Exposed and Non-WTC-Exposed Firefighters*, *JOEM* 80(6):297–303; and Parvin A, Kehm RD, Qiao B, Cone JE, Farfel MR, Zeig-Owens R, Goldfarb DG, Shapiro MZ, Todd AD, Insaf T, Hall CB, Boffetta P, Li J [2026], *Effect of World Trade Center Health Program on Mortality Among 9/11 Responders*, *Ann Epidemiol* 115:8–14.

have sufficient validity indicators to be considered high-quality studies eligible for further evaluation in accordance with the Program’s *Policy and Procedures*.³⁸ These 14 high-quality studies include the studies by Alper et al. [2017], Remch et al. [2018], Jordan et al. [2018], Cohen et al. [2019], Sloan et al. [2021], Li et al. [2023], and Mueller et al. [2024], discussed above, plus the 7 additional studies listed below:

- Brackbill RM, Thorpe LE, DiGrande L, Perrin M, Sapp JH, Wu D, Campolucci S, Walker DJ, Cone J, Pulliam P, Thalji L, Farfel M, Thomas P [2006], *Surveillance for World Trade Center Disaster Health Effects Among Survivors of Collapsed and Damaged Buildings*, MMWR Surveill Summ 55(2):1–18.
- Jordan HT, Miller-Archie SA, Cone JE, Morabia A, Stellman SD [2011b], *Heart Disease Among Adults Exposed to the September 11, 2001 World Trade Center Disaster: Results from the World Trade Center Health Registry*, Prev Med 53(6):370–376.
- Jordan HT, Stellman SD, Morabia A, Miller-Archie SA, Alper H, Laskaris Z, Brackbill RM, Cone JE [2013], *Cardiovascular Disease Hospitalizations in Relation to Exposure to the September 11, 2001 World Trade Center Disaster and Posttraumatic Stress Disorder*, JAMA 2(5):e000431.
- Brackbill RM, Cone JE, Farfel MR, Stellman SD [2014], *Chronic Physical Health Consequences of Being Injured during the Terrorist Attacks on World Trade Center on September 11, 2001*, Am J Epidemiol 179(9):1076–1085.
- Colbeth HL, Zeig-Owens R, Hall CB, Webber MP, Schwartz TM, Prezant DJ [2020], *Mortality among Fire Department of the City of New York Rescue and Recovery Workers Exposed to the World Trade Center Disaster, 2001–2017*, Int J Environ Res Public Health 17(17):6266.
- Alper HE, Brite J, Cone JE, Brackbill RM [2021], *Comparison of Prevalence and Exposure-Disease Associations Using Self-Report and Hospitalization Data Among Enrollees of the World Trade Center Health Registry*, BMC Med Res Methodol 21:162.
- Colbeth HL, Zeig-Owens R, Hall CB, Webber MP, Schwartz TM, Prezant DJ [2023], *Correction: Colbeth et al. Mortality Among Fire Department of the City of New York Rescue and Recovery Workers Exposed to the World Trade Center Disaster, 2001–2017. Int. J. Environ. Res. Public Health 2020, 17, 6266*, Int J Environ Res Public Health 20(16):6585.
- Krasnov H, Patel KA, Knobel P, Hsu H-HL, Teitelbaum SL, McLaughlin MA, Just AC, Sade MY [2025], *World Trade Center (WTC) Exposures and Cardiometabolic Risk Among WTC Health Program General Responders*, Am J Public Health 115(7):1120–1128.

³⁸ See *supra* note 8 at 7–8.

The Science Team conducted an evaluation, separately and together, of the 14 high-quality studies to determine the likelihood of a causal association between 9/11 exposures and the petitioned health condition. The systematic literature search, the Science Team's evaluation and synthesis of the available literature, and the Science Team's conclusions regarding the association between 9/11 exposure and IHD are described in full in the Science Team's *Evaluation of Scientific Evidence Supporting the Addition of Ischemic Heart Disease to the List of WTC-Related Health Conditions*.

In accordance with the *Policy and Procedures*,³⁹ the WTC Health Program uses the following Bradford Hill criteria to evaluate studies of 9/11-exposed populations: strength of association,⁴⁰ precision of the risk estimate,⁴¹ consistency of association,⁴² temporality,⁴³ biological gradient⁴⁴ and biological plausibility,⁴⁵ coherence,⁴⁶ and analogy.⁴⁷ The Science Team also considered the limitations of the evaluated evidence and whether the evidence is representative of the complete 9/11-exposed population of responder and survivors, including those exposed in the New York City disaster area as well as the Pentagon and Shanksville, Pennsylvania sites. The 14 high-quality studies are discussed in full in the Science Team's Evaluation; a summary of the evidence synthesis is found in Table 21, reproduced here:

³⁹ *Supra* note 8.

⁴⁰ It is generally thought that strong associations are more likely to be causal than weak associations; however, a weak association does not rule out a causal relationship.

⁴¹ Precision of the risk estimate describes the random error ("chance") inherent in estimating the strength of association (the effect size) between exposure and the health condition. It is often expressed as a confidence interval illustrating a range of plausible values of the effect estimate given sampling error. A narrow confidence interval indicates a more precise measure of the effect and a wider interval indicates greater uncertainty. While precision is not a Bradford Hill criterion, the Science Team takes it into consideration to evaluate the extent of random error in study estimates.

⁴² Consistent findings are demonstrated when they have been repeatedly reported by multiple studies. When assessing consistency, the Science Team also considers differences in study quality that could explain inconsistent study findings. If only a single study is available for evaluation, the Science Team will place more emphasis on evaluating the strength of the association and precision of the risk estimate.

⁴³ Temporality is the condition that the 9/11 exposure must precede the health condition of interest and is typically assessed when considering aspects of exposure in the study design.

⁴⁴ Studies establish an exposure-response relationship by demonstrating that increases in exposure (i.e., exposures of greater intensity and/or longer duration) are associated with a greater incidence of disease. A thorough evaluation of exposure-response requires analysis of multiple levels of exposure such that the investigator can demonstrate that the risk increases with increasing levels of exposure.

⁴⁵ Study findings demonstrate a basis in scientific theory that supports the relationship between the exposure and the health effect and do not conflict with known facts about the biology of the health condition.

⁴⁶ Coherence implies that the interpretation of a causal association agrees with known disease etiology.

⁴⁷ Analogy is used to inform on biological plausibility and coherence by contrasting the evidence on the suspected causal association with that from an established association between similar (analogous) causes or effects.

Aspect of Association (“Bradford Hill Criteria”) [Hill 1965]	Evaluation Findings
Strength of Association (and estimate of precision)	There were 14 high-quality studies identified for this evaluation [Brackbill et al. 2006; Jordan et al. 2011b; Jordan et al. 2013; Brackbill et al. 2014; Alper et al. 2017; Jordan et al. 2018; Remch et al. 2018; Cohen et al. 2019; Colbeth et al. 2020; Alper et al. 2021; Sloan et al. 2021; Li et al. 2023; Mueller et al. 2024; Krasnov et al. 2025]. Among these 14 studies, eight reported at least one statistically significant positive association between 9/11 exposures and IHD. Among positive associations, effect measures were modest ($RR < 2.0$) and the set of potential modifying factors (e.g., mediators, moderators, and confounders) was exceedingly large. Small effects and multifactorial causes give rise to estimate errors; therefore, the internal validity of existing risk estimates is uncertain. For example, more information is needed to understand the joint effects of 9/11 exposures and PTSD (or other comorbidities) on cardiovascular risk in the 9/11-exposed population to parse out any causal association between WTC dust exposure and IHD.
Consistency	Seven studies reported at least one significantly positive association between a measure of WTC dust exposure and an outcome including IHD [Jordan et al. 2011b; Jordan et al. 2013; Brackbill et al. 2014; Cohen et al. 2019; Sloan et al. 2021; Li et al. 2023; Mueller et al. 2024] compared with seven studies that did not [Brackbill et al. 2006; Alper et al. 2017; Jordan et al. 2018; Remch et al. 2018; Colbeth et al. 2020; Alper et al. 2021; Krasnov et al. 2025]. Only three longitudinal studies examined specific IHD outcomes [Jordan et al. 2013; Alper et al. 2017; Alper et al. 2021], and none of the three reported significant excess IHD risk from WTC dust exposure. Results were mixed in two cross-sectional studies that examined specific IHD outcomes [Brackbill et al. 2006; Mueller et al. 2024]. Fewer studies examined the association between the 9/11 agent, “sustained injury on 9/11” and CVD outcomes. Findings were mixed within and between studies. Four studies reported at least one significant positive association [Jordan et al. 2011b; Brackbill et al. 2014; Alper et al. 2017; Alper et al. 2021] with injury while two studies found no evidence of an association [Jordan et al. 2013; Krasnov et al. 2025] in multiple analyses. Negative findings from the two studies using hospital discharge records [Jordan et al. 2013; Alper et al. 2021] were inconsistent with the positive findings in the previous studies using self-reported outcomes [Jordan et al. 2011b; Alper et al. 2021]. Mixed findings might result from differences in the definitions of health conditions, exposure measures, populations at risk, case ascertainment, as well as observing modest effects, among other possible explanations. There was evidence of potential bias from residual confounding (e.g., comparison of Model 1 and Model 2 in Mueller et al. 2024). Most studies defined cardiovascular outcomes as broad categories of self-reported, loosely related circulatory system conditions. Errors in ascertainment from self-report appeared slightly attenuated and non-differential in Alper et al. [2021], but substantial in Mueller et al. [2024]. Patterns of inconsistency over time suggested that variability among studies decreased with increasing time since exposure. This suggests that improvements in data quality from extended follow-up will benefit risk assessment moving forward. Further benefits may be achieved by improving definitions of health conditions used in future studies.
Temporality	Longitudinal studies have generally taken steps to exclude prevalent CVD cases. In contrast, steps taken to alleviate general limitations of cross-sectional designs were poorly described; therefore, these cross-

	sectional studies merit cautious interpretation [Brackbill et al. 2006; Brackbill et al. 2014; Mueller et al. 2024]. In all studies, subclinical health conditions may have manifested prior to 9/11 in some individuals, or the events of 9/11 may have triggered CVD in persons with relevant pre-9/11 conditions.
Biological Gradient	Exposure-response findings were inconsistent. However, findings from multiple studies that examined exposure-response reported evidence suggestive of modestly increasing CVD or IHD risk across increasing categories of 9/11 exposure.
Plausibility, Coherence, and Analogy	An association between WTC dust exposure and IHD is coherent with the available evidence. There is large uncertainty in an analogy comparing a proposed causal association between WTC dust exposure and IHD and the established causal relationship between PM_{2.5} and IHD. The latter is supported by a large body of evidence linking both short- and long-term exposures to ambient air pollution to increased CVD risk. Chronic exposure to PM_{2.5} in air pollution and acute exposure to WTC dusts are largely dissimilar. There is sparse evidence available on the relevant etiologic period for late cardiovascular effects from PM_{2.5} exposure; therefore, the biological plausibility of these effects remains largely uncertain. There is considerably less evidence supporting a causal association between sustaining injury on September 11, 2001, and cardiovascular disease. It is posited that the trauma of sustaining injuries during the 9/11 attacks initiates stress-related psychological and biological mechanisms that might lead to increased cardiovascular disease risk. It has also been suggested that injury could alter physical function, which might adversely affect cardiovascular health. However, biological mechanisms of injury-related IHD in the absence of physical disability and chronic stress are not currently known. Information refuting the biological plausibility of 9/11 injury or WTC dust as causal agents was not found.
Representativeness	There was representation of all groups of 9/11-exposed populations.

Abbreviations: CVD, cardiovascular disease; IHD, ischemic heart disease; PTSD, posttraumatic stress disorder; RR relative risk.

Upon review of the evidence available in peer-reviewed, published, epidemiologic studies regarding IHD among 9/11-exposed populations, the Science Team assessed the degree to which the evidence supports a causal association between 9/11 exposures and IHD and determined that, at this time, there is a limited likelihood of causal association⁴⁸ between 9/11 exposures and IHD (Category III).

E. Administrator’s Final Decision on Whether to Propose the Addition of Ischemic Heart Disease to the List

⁴⁸ See *Policy and Procedures* *supra* note 8 at Sec. V.C. Category III—Evidence Supports Limited Likelihood of Causal Association.

Pursuant to the PHS Act, sec. 3312(a)(6)(B)(iv) and 42 CFR 88.16(a)(2)(iv), and in accordance with Sec. VIII.B. of the *Policy and Procedures*, the Administrator has determined that insufficient evidence is available to take further action at this time, including proposing the addition of IHD (ICD-10 codes I20–I22, and I24–I25) to the List (pursuant to the PHS Act, sec. 3312(a)(6)(B)(ii) and 42 CFR 88.16(a)(2)(ii)) or publishing a determination not to publish a proposed rule in the *Federal Register* (pursuant to the PHS Act, sec. 3312(a)(6)(B)(iii) and 42 CFR 88.16(a)(2)(iii)). The Administrator has also determined that requesting a recommendation from the STAC (pursuant to the PHS Act, sec. 3312(a)(6)(B)(i) and 42 CFR 88.16(a)(2)(i)) is unwarranted.

For the reasons discussed above, the Petitions 024, 042, 046, 047, 051, 056, 058, and 067 collective request to add ischemic heart disease (ICD-10 codes I20–I22, and I24–I25) to the List of WTC-Related Health Conditions is denied.

F. Approval to Submit Document to the Office of the Federal Register

The Secretary, HHS, or his designee, the Director, Centers for Disease Control and Prevention (CDC) and Administrator, Agency for Toxic Substances and Disease Registry (ATSDR), authorized the undersigned, the Administrator of the WTC Health Program, to sign and submit the document to the Office of the Federal Register for publication as an official document of the WTC Health Program. Jay Bhattacharya, MD, PhD, Senior Official Carrying out the Delegable Duties of the CDC Director, approved this document for publication on June 13, 2026.

John J. Howard,

Administrator, World Trade Center Health Program and Director, National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, Department of Health and Human Services.

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