Memorandum **15 February, 2012**

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To: **Diana Wong, Ph.D.**
Designated Federal Officer
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Subject: References Discussed by the SAB Review Panel During the Peer Review Meeting of the Draft Toxicological Review of Libby Amphibole Asbestos

The Environmental Protection Agency's (EPA) Science Advisory Board (SAB) met from February 6-8, 2012 to review the draft Toxicological Review of Libby Amphibole Asbestos. This meeting was open to the public.

During the meeting, members of the SAB panel had several requests for access to copies of recent articles relevant to the subject toxicological review. Some of those references were new, in that they were not previously cited in the original toxicological review. Others, marked below with an *, were already included in the toxicological review reference list.

The references on this page were all discussed during the recent SAB review of the Libby Amphibole Assessment and are now listed together in one memo for the sake of completeness.

The full citation of each article is included below with active hyperlinks to access information regarding the publication.

This memo supersedes the one dated February 6th on the same topic.

References from the EPA presentation:

Adgate, JL; Cho, SJ; Alexander, BH; Ramachandran, G; Raleigh, KK; Johnson, J; Messing, RB; Williams, AL; Kelly, J; Pratt, GC. (2011). Modeling community asbestos exposure near a vermiculite processing facility: Impact of human activities on cumulative exposure. J Expo Sci Environ Epidemiol 21: 529-535.

Alexander, BH; Raleigh, KK; Johnson, J; Mandel, JH; Adgate, JL; Ramachandran, G; Messing, RB; Eshenaur, T; Williams, A. (2012). Radiographic evidence of nonoccupational asbestos exposure from processing libby vermiculite in minneapolis, Minnesota. Environ Health Perspect 120: 44-49.

Antao, VC; Larson, TC; Horton, DK. (In Press) Libby vermiculite exposure and risk of developing asbestos-related lung and pleural diseases. Curr Opin Pulm Med 18: 161-167.

Clin, B; Paris, C; Ameille, J; Brochard, P; Conso, F; Gislard, A; Laurent, F; Letourneux, M; Luc, A; Schorle, E; Pairon, JC. (2011). Do asbestos-related pleural plaques on HRCT scans cause restrictive impairment in the absence of pulmonary fibrosis. Thorax 66: 985-991.

Larson, T; Lewin, M; Kapil, V; Gottschall, E; Rose, C; Antao, V. (2009). Radiographic Abnormalities and Spirometry Results in a Cohort Exposed to Libby Amphibole. Am J Respir Crit Care Med 179: A5894.

Larson, TC; Antao, VC; Bove, FJ; Cusack, C. (2012). Association Between Cumulative Fiber Exposure and Respiratory Outcomes Among Libby Vermiculite Workers. J Occup Environ Med 54: 56-63.

Lenters, V; Vermeulen, R; Dogger, S; Stayner, L; Portengen, L; Burdorf, A; Heederik, D. (2011). A meta-analysis of asbestos and lung cancer: is better quality exposure assessment associated with steeper slopes of the exposure-response relationships. Environ Health Perspect 119: 1547-1555.

Supporting publications to the community exposure reconstruction for the Western Mineral Products Site:

*ATSDR (Agency for Toxic Substances and Disease Registry). (2003). Health consultation: Exposure assessment: Western Mineral Products Site. Atlanta, GA.

*ATSDR (Agency for Toxic Substances and Disease Registry). (2005). Final report of the Northeast Minneapolis Community Vermiculite Investigation (NMCVI) and worker/household study: Cohort identification and characterization. Atlanta, GA.

ATSDR (Agency for Toxic Substances and Disease Registry). (2012). Health Consultation: Residual soil and indoor asbestos assessment, Western Mineral Products Site. St. Paul, MN.

Other articles requested/discussed by the panel:

*ATS (American Thoracic Society). (2004). Diagnosis and initial management of nonmalignant diseases related to asbestos. Am J Respir Crit Care Med 170: 691-715. http://dx.doi.org/10.1164/rccm.200310-1436ST.

Bernstein, DM; Rogers, RA; Sepulveda, R; Donaldson, K; Schuler, D; Gaering, S; Kunzendorf, P; Chevalier, J; Holm, SE. (2011). Quantification of the pathological response and fate in the lung and pleura of chrysotile in combination with fine particles compared to amosite-asbestos following short-term inhalation exposure. Inhal Toxicol 23: 372-391. http://dx.doi.org/10.3109/08958378.2011.575413.

*Bourbeau, J; Ernst, P; Chrome, J; Armstrong, B; Becklake, MR. (1990). The relationship between respiratory impairment and asbestos-related pleural abnormality in an active work force. Am Rev Respir Dis 142: 837-842. http://dx.doi.org/10.1164/ajrccm/142.4.837.

Cyphert, JM; Padilla-Carlin, DJ; Schladweiler, MC; Shannahan, JH; Nyska, A; Kodavanti, UP; Gavett, SH. (2012). Long-term response of rats to single intratracheal exposure of libby amphibole or amosite. J Toxicol Environ Health A 75: 183-200. http://dx.doi.org/10.1080/15287394.2012.641203.

Fukagawa, NK; Li, M; Sabo-Attwood, T; Timblin, CR; Butnor, KJ; Gagne, J; Steele, C; Taatjes, DJ; Huber, S; Mossman, BT. (2008). Inhaled Asbestos Exacerbates Atherosclerosis in Apolipoprotein E--Deficient Mice via CD^4 T Cells. Environ Health Perspect 116: 1218-1225.

Marchand, LS; St-Hilaire, S; Putnam, EA; Serve, KM; Pfau, JC. (2012). Mesothelial cell and anti-nuclear autoantibodies associated with pleural abnormalities in an asbestos exposed population of Libby MT. Toxicol Lett 208: 168-173. http://dx.doi.org/10.1016/j.toxlet.2011.10.024.

*Mastrangelo, G; Ballarin, MN; Bellini, E; Bicciato, F; Zannol, F; Gioffrè, F; Zedde, A; Tessadri, G; Fedeli, U; Valentini, F; Scoizzato, L; Marangi, G; Lange, JH. (2009). Asbestos exposure and benign asbestos diseases in 772 formerly exposed workers: dose-response relationships. Am J Ind Med 52: 596-602. http://dx.doi.org/10.1002/ajim.20713.

Shannahan, JH; Nyska, A; Cesta, M; Schladweiler, MC; Vallant, BD; Ward, WO; Ghio, AJ; Gavett, SH; Kodavanti, UP. (2012a). Subchronic pulmonary pathology, iron overload, and transcriptional activity after libby amphibole exposure in rat models of cardiovascular disease. Environ Health Perspect 120: 85-91. http://dx.doi.org/10.1289/ehp.1103990.

Shannahan, JH; Ghio, AJ; Schladweiler, MC; Richards, JH; Andrews, D; Gavett, SH; Kodavanti, UP. (2012b). Transcriptional activation of inflammasome components by Libby amphibole and the role of iron. Inhal Toxicol 24: 60-69. http://dx.doi.org/10.3109/08958378.2011.633942.

*Weill, D; Dhillon, G; Freyder, L; Lefante, J; Glindmeyer, H. (2011). Lung function, radiological changes and exposure: analysis of ATSDR data from Libby, MT, USA. Eur Respir J 38: 376-383. http://dx.doi.org/10.1183/09031936.00050210.

*Whitehouse, A. (2004). Asbestos-related pleural disease due to tremolite associated with progressive loss of lung function: Serial observations in 123 miners, family members, and residents of Libby, Montana. Am J Ind Med 46: 219-225. http://dx.doi.org/10.1002/ajim.20053.

Wilken, D; Velasco Garrido, M; Manuwald, U; Baur, X. (2011). Lung function in asbestos-exposed workers, a systematic review and meta-analysis. J Occup Med Toxicol 6: 21. http://dx.doi.org/10.1186/1745-6673-6-21.