ENVIRON

Memorandum

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From: Robert P. DeMott, Ph.D., DABT, Principal Toxicologist
James L. Poole, Ph.D., CIH, Industrial Hygiene Manger

Date: 31 October 2008

Re: October 2, 2008 Meeting in Sarasota regarding sulfur compound emissions from imported gypsum board

Thank you for participating in the briefing provided by ENVIRON International (ENVIRON) on October 2, 2008 regarding an investigation of sulfur compound emissions from certain imported gypsum board ("wallboard") and related health considerations. As discussed, the goal of this briefing was to inform you about the source of sulfide gases that has become apparent in some number of houses constructed since 2005 in certain areas of Florida. This material was presented in case you receive inquiries from parties who may be experiencing this phenomenon.

Our briefing was presented by Dr. Robert DeMott, a board-certified toxicologist, and Dr. James Poole, a Certified Industrial Hygienist, both from ENVIRON's Tampa office and both of whom designed and conducted the investigations described. Also attending was Douglas Halsey of the law firm of White & Case LLP.

At the briefing, Bob DeMott explained the studies and tests that identified the specific sulfur-containing gases emitted from the wallboard and the levels of those sulfur-containing gases in homes. The overall conclusions presented were: 1) the release of sulfur-containing gases was demonstrated selectively with wallboard imported from China; 2) corrosion of certain components found in affected homes could be re-created in a test chamber by exposing otherwise unaffected copper to the Chinese wallboard; and 3) the room air from over 30 homes has been analyzed for the relevant sulfur-containing gases and none of the concentrations approach levels that can cause health effects. ENVIRON also responded to questions from various participants and provided additional information on the nature of the testing completed, the geographical areas where affected homes have been found, and the characteristics of the wallboard producing the emissions.

At the conclusion of the briefing, several participants asked to be informed of any additional developments and requested further dissemination of information. A brief summary of the briefing is provided below.

ENVIRON presented the results of sampling for reduced sulfur gases in room air from over 30 homes in Southwest Florida. Carbon disulfide has been detected in approximately half of sampled homes, with typical detected concentrations of approximately 5 ppb – all samples were less than 15 ppb. The lowest chronic MRL (minimal risk level) from ATSDR is 300 ppb. Carbonyl sulfide has been detected occasionally, in the same ppb range. Hydrogen sulfide has never been found at higher levels in room air than the coincident outdoor level.

Dr. DeMott also explained the investigation of odor complaints and HVAC system failures in Southwest Florida. Specifically, Dr. DeMott noted that follow-up on HVAC system failures indicated an unusual rate of copper heat exchange coil corrosion and corresponding loss of integrity, which allowed the refrigerant gas to escape and cause the HVAC units to freeze-up. The affected HVAC coils had an observable black residue, which subsequent materials testing confirmed to be sulfur-based. Thereafter, chamber testing demonstrated that the wallboard from China emitted carbon disulfide, carbonyl sulfide and hydrogen sulfide, which caused the otherwise unaffected copper sample in the chamber to corrode in a manner that was chemically identical to the copper corrosion observed in affected homes.

It was also noted that repeated coil failures in certain homes, in conjunction with installation/in-service dates and evaluation of new corrosion, indicates that the emission of the sulfur-containing gases from the Chinese wallboard can continue for at least 2 years. At this time, there is no definitive data indicating when or if the Chinese wallboard will cease to emit the sulfur-containing gas.

It was also discussed that the timeframe for construction of homes appears to be significant. To date, all affected homes were constructed after Hurricane Katrina (2005), which affected the availability of building materials and coincides with a period when a substantial amount of Chinese wallboard was imported. It also appears as if this phenomenon is limited to particular sources and timeframes of production, as opposed to being a characteristic of all Chinese wallboard.

Furthermore, during the briefing, one of the participants inquired whether the emissions could be linked to wallboard made from synthetic (known as flue gas derived, or "FGD") gypsum. According to wallboard trade press stories, FGD gypsum was not yet manufactured in China during the relevant timeframe. Also, preliminary materials testing indicates that the Chinese drywall of concern was not FGD gypsum.

Also during the briefing, participants commented that odor complaints, failed HVAC coils, or both had been reported at a small number of residences in Palm Beach County, Martin County, Collier County, Lee County and Sarasota County. Regarding other areas, however, the EPA's participant advised that after checking with the other regional offices of the EPA, they had heard of no reports of this phenomenon.

At the end of the briefing, one agency participant presented the view that the detected levels of sulfur-containing gas did not appear to present a health risk. The various individuals attending the meeting indicated their concurrence with the conclusion that there were no public health concerns associated with the low part-per-billion levels of sulfur-containing gas emissions found to date.

This represents a brief summary of the presentation and inquiries from the participants. If you have specific questions or comments on the meeting summary, please contact us at 813-628-4325.

Thank you again for taking the time to participate in the briefing.