U.S. Consumer Product Safety Commission Staff
Summary of Contractor's
Assessment of Residences Containing Problem Drywall
Six Home Follow-Up Study[1]
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The U.S. Consumer Product Safety Commission (CPSC) contracted with Environmental Health & Engineering (EHE) to conduct an in-home investigation of six homes previously sampled in the earlier 51-Home Study (EH&E, 2010). The objectives of this follow-up study were to determine if the changing seasons resulted in differences in specific parameters that were found to be associated with "problem" drywall, and to conduct a pilot study to determine if remediation was observed to have an impact on those parameters. (Only one of the six homes was remediated between the original sampling performed in 2009, and the sampling performed in this current study. The remediation consisted of complete removal and replacement of the drywall but not replacement of the ground wires.[2]) In addition, one of the six homes was a control home (*i.e.*, no problem drywall) that was also selected from the control homes in the earlier 51-Home Study. Homes were selected based on a number of factors, including the willingness of the homeowner to participate in the follow-up study and the results of the initial testing in 2009.

Several parameters that were originally identified as key indicators of problem drywall in the 51-Home Study were again evaluated in this study. To ensure comparability, the test methods were identical to those used in the 51-Home Study. During the first follow-up visit to the homes in May 2010, a thorough assessment was conducted, and then follow-up testing for select parameters was carried out in 2-week intervals in the spring (between May and June 2010), fall (between October 2010 and November 2010), and winter (between November 2010 and December 2010). Testing was not conducted during the summer months, the conditions under which the original 51-Home Study was performed.

Although this was a very limited study with few homes, several important findings were noted:

- Elemental sulfur (S_8), which was previously identified as a useful marker of problem drywall, was detected in all five test homes that had problem drywall at the time of the original sampling in the 51-Home Study. However, in this study, elemental sulfur was no longer detected in the drywall samples from the home that had been remediated and it remained undetected in the samples from the control home. The same relationship was also observed in this study for elevated levels of strontium and carbonate, each of which had also been previously identified as potentially useful markers to screen for the presence of problem drywall.

[1] This document was prepared by CPSC staff and has not been reviewed or approved by, and may not necessarily reflect the views of, the Commission.
[2] This remediated home is part of a multifamily dwelling . The condominium is physically adjacent to and attached to an unremediated condominium with problem drywall.

- The homes with problem drywall had, on average, visible ground wire corrosion ratings of 2.5–3 (moderate to significant visible corrosion, respectively) compared to the control home that had a rating of 1 (no visible corrosion). The remediated home continued to have visible wire corrosion. This was expected because the ground wires were not replaced as part of the remediation.[3] Ground wire corrosion in this home represented historic corrosive conditions in the home.

- Corrosion rates, as determined by corrosion classification coupons in the four unremediated problem drywall homes, varied by season, with the greatest difference occurring between the hotter summer and the cooler winter sampling periods. Corrosion rates in the spring and fall were similar to each other and lower than the rates in the summer months. Corrosion rates on copper and silver coupons represent current corrosive conditions in the home. For the remediated home, corrosion was elevated during the period when the home contained problem drywall (pre-remediation) but was lower after remediation (post-remediation).

- On average, house hydrogen sulfide (H_2S) concentrations were higher in the four unremediated homes with problem drywall compared to the control and remediated homes. This is consistent with the observations in the 51-Home Study, which found that homes with problem drywall had elevated levels of H_2S compared to control homes. The coolest sampling period had the least number of homes with detectable H_SS, suggesting that the generation of H_2S may be limited in the months with cooler temperatures. This association was also observed in the larger 51-Home Study, which found that higher indoor temperatures were associated with increased concentrations of H_2S.

In conclusion, this limited study of six homes found that seasonal variability can affect the parameters that are associated with problem drywall. Cooler temperatures and lower indoor dew points in general yielded lower corrosion rates on corrosion classification coupons and the least number of homes with detectable H_2S.[4] Additionally, the study found that the removal of "problem" drywall can reduce the rate of corrosion, as seen by the lower post-remediation corrosion rates on corrosion classification coupons compared to pre-remediation corrosion rates.

REFERENCE

EH&E, 2010. *Final Report on an Indoor Environmental Quality Assessment of Residences Containing Chinese Drywall.*

[3] This remediated home is a condo that is physically adjacent to and attached to an un-remediated home with problem drywall. The possibility that air from the uremediated home infiltrated the attached condo cannot be discounted at this time.

[4] The dew point is the temperature at which air must be cooled, at constant barometric pressure, for water vapor to condense into water. The condensed water is called dew. At a given temperature, but independent of barometric pressure, the dew point indicates the absolute humidity of air.