Document Log

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CC	**BCC**
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Subject	
FW: CHPS Materials Subcommittee - Coal Fly Ash Issue	02/27/2008 10:58 AM

Document Body

Colleagues,

Dr. Toni Stein of the California Department of Public Health has again asked the state materials subcommittee to ban the use of concrete containing fly ash because of her opinion of increased risk of mercury to school children. Her concerns are enumerated below.

I will shortly forward you another email from Jim Sprague who works with Boral and is with the carpet industry. Although Dr. Stein's concerns do not yet apply to carpeting that uses fly ash in backing, the parallels could be made in the future.

I am planning to send a respond to Ms. Kirsten Ritchie who is chair of the material subcommittee, a civil engineer and active in USGBC. I am going to suggest a meeting with the committee and appropriate subject matter experts to discuss the risks associated with mercury in concrete containing fly ash. That way, her committee can make an informed decision and not one just based on opinion or bias. I am also going to suggest that we try to provide technical information that would be helpful to the committee. Perhaps you could recommend some existing data from EPRI, EERC or others. Ken and Mae provided me information that I sent Dr. Stein several years ago and even as recently as two weeks ago, she suggested that there is probably some middle ground, but was vague on how to define it.

Any comments would be most appreciated.

Thanks, Dave

From: James Sprague [mailto:jspra@hotmail.com]
Sent: Wednesday, February 27, 2008 6:31 AM

To: Kirsten Ritchie
Cc: Dave Hassett; Dave Goss; russ hill; Russ Majors
Subject: FW: CHPS Materials Subcommittee - Coal Fly Ash Issue

Kirsten, below is the original submission from A. Stein and the response from EERC. It may be beneficial to revisit both.

JIM

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> Subject: FW: FW: CHPS Materials Subcommittee - Coal Fly Ash Issue
> Date: Tue, 26 Feb 2008 11:33:22 -0500
> From: Russ.Majors@boral.com
> To: jspra@hotmail.com
>
>
>
> -----Original Message-----
> From: Hassett, David [mailto:dhassett@undeerc.org]
> Sent: Monday, June 12, 2006 12:25 PM
> To: Russ Majors (BMTI - San Antonio); 'TStein@dhs.ca.gov'; 'dcgoss@acaa-usa.org'; 'kritchie@scscertified.com'; 'DPapke@CIWMB.ca.gov'; 'CWilliams@CIWMB.ca.gov'; 'BOrr@CIWMB.ca.gov'
> Cc: Pflughoeft-Hassett, Debra F.; Heebink, Loreal; Buckley, Tera; Zacher, Erick; Harju, John
> Subject: FW: FW: CHPS Materials Subcommittee - Coal Fly Ash Issue
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> Subject: FW: FW: CHPS Materials Subcommittee - Coal Fly Ash Issue
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>
> The Energy & Environmental Research Center (EERC) received a copy of
> information prepared by Dr. Antoinette Stein regarding coal combustion fly
> ash use in concrete and the potential for mercury present in fly ash to be
> released to the air or atmosphere from the concrete matrix. Since the EERC
> is referenced several times in the information prepared by Dr. Stein, I feel
> compelled to provide some clarifying information.
>
> The EERC feels that the use of fly ash in concrete is an environmentally
> appropriate use for this material. The EERC does not consider the use of fly
> ash in concrete to be of concern to human health and safety, and there is no
> scientifically valid evidence to support the restriction of the use of fly
> ash in concrete. The coal ash industry has a long history of performing
> research on environmental and health effects of coal ash use, and the EERC
> believes this will continue as mercury emission controls are implemented and
> impacts to fly ash quality are documented.

>
> First, it is important to note that fly ash used to produce concrete must
> meet quality specifications, and while these specifications do not address
> the trace element content of the fly ash, they do limit the fly ash to that
> which contains relatively low amounts of carbon. Since carbon addition is
> one potential mercury control technology option for use at coal-fired power
> plants, some of the data in EERC reports and other sources is on high carbon
> fly ash samples which may have elevated mercury contents but would not meet
> the specifications for use as a mineral admixture in concrete. It is also
> important to note that fly ash comprises a very small percentage of the
> concrete matrix and through chemical reactions becomes part of that matrix.
> Currently, no large-scale coal-fired power plants have any mercury control
> technologies operating or impacting the fly ash in the marketplace.
>
> Specific comments on Dr. Stein's remark No. 10: The EERC has reported some
> very limited vapor-phase releases from 100% fly ash samples under ambient
> temperature conditions. The EERC also reported that many fly ash samples
> actually sorb mercury from the air under these same conditions. The EERC's
> most recent conclusion based on these data is that most fly ash samples
> tested act as mercury sinks rather than mercury sources. Results obtained
> from experiments to evaluate long-term ambient-temperature release of
> mercury from CCBs ranged from a net release to a net sorption of mercury.
>
> The extremely low levels both of sorption and release of mercury indicate
> that this release mechanism has "very low potential to impact the loading of
> mercury in the atmosphere" as reported in our project report titled "MERCURY
> AND AIR TOXIC ELEMENT IMPACTS OF COAL COMBUSTION BY-PRODUCT DISPOSAL AND
> UTILIZATION" dated June 2005. Similar data have been reported by Dr. Mae
> Gustin, University of Nevada-Reno.
>
> Specific comments on Dr. Stein's remark No. 13: The EERC has reported
> significant increases in fly ash mercury content when mercury emission
> controls have been used. In these cases, the mercury control relied on
> addition of carbon sorbents, which was sometimes collected with the fly ash.
> The EERC also found that these samples had elevated carbon content and would
> not be suitable for use in concrete because of the fly ash specification. In
> some cases, the carbon was added after the bulk of the fly ash was
> collected, and a very high carbon stream was collected and evaluated. This
> type of sample is not suitable for concrete or other typical fly ash use
> applications and will never be used in concrete. It is a sample of this type
> that exhibited the 120 ppm mercury content.
>
> Regarding the release of mercury from concrete (or other building products
> containing fly ash or other CCBs), the EERC has also completed a study at
> the Lewis & Clark Fort Mandan Visitors Service Center. The Lewis & Clark
> Fort Mandan Visitors Service Center is an architecturally unique structure
> constructed nearly entirely out of coal ash-containing products. The
> 5500-square-foot facility hosts hundreds of visitors a day, with projections
> of thousands in coming years. The Visitors Center aims to tell the story of
> Fort Mandan and was also designed as a showcase to educate the public on the
> practical use of coal combustion by-products (CCBs) in normal construction
> and engineering applications. The following coal ash-containing products
> were used to construct the Visitors Center. Please note that the ready-mix

> concrete used in this facility was 70% replacement which is extremely high.
>
> PRODUCT SUPPLIER
>
>
> Wallboard from synthetic gypsum TVA and Standard Gypsum
> Flex-Crete blocks ISG Resources
> Carpet Mannington
> Ceramic Tile S&B Interior
> Acoustic Ceiling Tile Wagon Wheel Lumber
>
> Bottom Ash Great River Energy
> Fly Ash in Concrete (70% replacement) Great River Energy
> Shingles Wagon Wheel Lumber
> Magna-wall Stucco ISG Resources
> Type N Mortar ISG Resources
> Paint Wagon Wheel Lumber
> Cultured Stone Strata Corp. & Cultured Stone
>
>
> CCBs, which the EERC coal ash research team and many others consider as a
> valuable and useful resource, are sometimes thought of as just waste
> material. In general, CCBs can be successfully used in construction as an
> engineering material that not only enhances performance, but can also be
> more cost-effective than conventional materials.
>
> CCBs, especially fly ash, can contain trace elements that are considered
> problematic. The entire suite of trace elements considered consists
> primarily of elements that are essential nutrients for various life forms
> but also include several elements that appear to have little or no
> nutritional value. Mercury is one of these elements. Coal fly ash is known
> to contain concentrations of mercury generally between 0.25 to 0.50 parts
> per million (ppm). The primary consideration for mercury is the potential
> for release from construction materials containing CCBs. This consideration
> is not usually applied to other construction materials and engineering
> products which could also contain mercury.
>
> Sampling of air inside and outside of the Fort Mandan Visitors Service
> Center was performed on three occasions. The sampling was performed as
> follows.
>
> Air was drawn through 8-mm O.D. quartz tubes containing gold-coated quartz
> granules to trap mercury vapor. After sampling, the tubes were returned to
> the laboratory where the mercury was determined using double gold
> amalgamation with atomic fluorescence detection.
>
> The following is a summary of the analytical data.
>
> Table 1. Air concentrations in ng/m3 of gas-phase mercury at the Fort Mandan
> Visitors Service Center.
>
> Area Low High Average No. of Samples
>

> Vending Area 1.0 2.7 1.6 3
> Gift Area 2.1 5.2 3.6 2
> Office 3.1 3.1 3.1 1
> Women's Restroom 3.0 3.5 3.2 2
> Outside 0.5 1.2 0.96 5
>
>
> Table 2 shows air concentrations of mercury in an older home in Grand Forks,
> North Dakota, containing no known sources of CCBs.
>
>
> Table 2. Air Concentrations in ng/m3 of Gas-Phase Mercury in an Older Home
> in Grand Forks, ND.
>
> Location Hg Concentration in ng/m3
>
> Basement Bedroom 1.4
> Dining Room 4.2
> Kitchen 3.9
> Outside of Home 1.1
>
> From a comparison of Tables 1 and 2, it can be seen that there are no real
> differences in concentrations of mercury in the indoor air in a home in
> Grand Forks, ND, and the Fort Mandan Visitors Service Center near Washburn,
> ND. This is to be expected since, in recent studies conducted at the EERC,
> it was found that emissions of mercury vapor from CCBs are minimal to barely
> measurable.
>
> It has been reported that average outdoor air concentrations of gas-phase
> mercury ranged from 1.0 to 3.5 ng/m3 with a reported mean concentration of
> 1.63 in the state of Minnesota.
>
> All of the values are within limits that would be expected for air inside of
> a building which is from 2 to 5 ng/m3. The outside value of less than 1
> ng/m3 is exceptionally low as might be expected in a pristine area. There is
> no indication that the ash incorporated into this structure and structural
> components has in any way contributed to the indoor air quality beyond what
> would be expected from normal construction materials not containing any ash.
>
>
> The EERC report concluded that the mercury concentrations in indoor air at
> the Fort Mandan Visitors Service Center were low as anticipated by previous
> EERC studies of mercury releases from CCBs. The mercury concentrations in
> air sampled inside the Visitors Center were equivalent to other indoor air
> samples tested for comparison in this study, and outdoor air quality was
> equivalent at the Visitors Center and in the Grand Forks sample. The large
> amounts of CCB-containing construction materials did not appear to impact
> the mercury concentrations at the Visitors Center, supporting the hypothesis
> that significant mercury is not released from currently available CCBs under
> typical utilization applications.
>
> The EERC has not had adequate time to fully address all the remarks prepared
> by Dr. Stein, but the EERC research team and I would be pleased to answer

> any specific questions regarding our research or to hold discussions with
> anyone interested in further information. Please feel free to contact me.
>
>
>
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> From: Stein, Toni (DHS-EHLB) [mailto:TStein@dhs.ca.gov]
> Sent: Friday, June 09, 2006 12:03 PM
> To: Papke, Dana@IWM; Ken McIntosh; Tom Lent; Dennis Bottum; Dennis Bradway;
> Eric Shamp; Jim Ogden; John Zinner; kritchie@scscertified.com; Tom Phillips;
>
> Williams, Clark@IWM; Ying Wang; Orr, Bill@IWM
> Cc: David Goldman
> Subject: RE: CHPS Materials Subcommittee - Coal Fly Ash Issue
>
>
>
> Good morning, the following is in response to Dana's request to me for
> internet links and reference publications to support the recommendation to
> vote to keep Coal Fly Ash (CFA) off of the recycled material category list
> in Table A3 of the CHPS guidelines:
>
>
>
> For those who do not know me, I work at the Department of Health Services as
>
> an Air Pollution Research Scientist in the Environmental Health Laboratory
> Branch in the Indoor Air Quality Section, my other related background can be
>
> read in the following footnote[1][1].
>
>
>
> There is no dispute that there are structural performance benefits of
> concrete-coal fly ash mixtures. But there are numerous other reasons to keep
>

> coal fly ash off of Table A3 list in the CHPS criteria guidelines. CHPS
> represents a guideline system for healthy sustainable schools and the use of
>
> concrete mixed with coal fly ash represents a non-sustainable practice that
> poses possible significant risk to the health and safety of children.
>
>
>
> In light of the abbreviated time available to prepare this, I'll limit the
> scope of these detailed comments to discussion of the toxicity of coal fly
> ash and its documented mobility mechanisms and characteristics to enter the
> air and argue that because there is valid information found in the
> literature showing that there are valid coal fly ash toxicity concerns and
> valid documented modes of mobility for the toxicity to transport into the
> air posing a possible acute, chronic, developmental, or reproductive toxic
> risk to children in schools. Because the toxicity and mobility indications
> are compelling a position of precaution should be mad and coal fly ash
> should not be included in Table A3 until further more definitive impact
> information is completed that applies to the permitted use scenarios in this
>
> schools applications that house sensitive populations that may be exposed to
>
> emitted toxicity from the coal fly ash. Please remember in your decision
> making that in California over 10% of children in schools suffer with asthma
>
> and are thus considered a sensitive population sector.
>
>
>
> Erroneous claims have been made that coal fly ash is "environmentally benign
>
> and substantially unreactive with no deleterious impurities" and safe
> because there is some TCLP leach testing data showing it does not leach out
>
> toxics. The burden of precaution under CEQA or Prop 65 for public health
> protection from is the coal fly ash producers burden since these products
> contain toxic chemicals. Adequate environmental health and safety impact
> report should be conducted prior to its sale and use in California schools
> to evaluate, examine, and mitigate all impacts.
>
> 1.
>
>
>
> Fly Ash Toxicity
>
> 1. Mercury (Hg) is a toxic compound that in its elemental inorganic
> form is a liquid at room temperature and has readily volatilized due to its
> vapor pressure. As a result it represent a significant indoor inhalation
> exposure risk. Mercury is listed as a persistent bio-accumulative compound
> and poses significant risk to human health for exposures that exceed daily
> regulatory limits. Mercury and mercury compounds are on the list of
> chemicals known to the state of CA to cause reproductive toxicity. OEHHA

> lists inorganic Hg and its compounds on CA's chronic toxic compound
> list[2][2] and has a very low inhalation reference exposure level 0.09 mg/m3
>
> and it is listed on OEHHA's acute REL list with a Severe severity effect
> rating and is listed as having a reproductive/developmental toxicity
> endpoint[3][3].
>
> 2. Coal fly ash also contains other heavy metals and significant
> quantities of crystalline silica, a human carcinogen.
>
> 3. There are strict Federal and State regulations that require coal
> burning facilities to capture and collect fly ash because such particulate
> is regulated by the National Ambient Air Quality Standards (NAAQS). Fly ash
>
> if released by a power plant is considered a pollutant.
>
> 4. In addition to it being a particulate pollutant, coal fly ash
> intrinsically contains specified amounts of mercury, and other heavy metals.
>
> Numerous studies and datasets show that coal fly ash contains quantities of
> mercury and other toxic compounds[4][4]. US EPA documents that Hg is
> emitted from coal burning power plants at a rate of 1.600E-5 Lb per Million
> Btus Heat Input[5][5], [6][6]. In the US many studies have been funded
> through the Coal Ash Research Center (CARC) at the University of North
> Dakota[7][7] studying the Hg content of coal fly ash. The Canadian
> Electricity Association (CAE) data indicates mercury concentrations ranging
> from <0.002 to 1.221 ppm in fly ash[8][8]. Hassett et al. reported mercury
> concentrations ranging from <0.01 to 2.41 ppm in samples of fly ash from
> full-scale coal-fired power plants from all ranks of U.S. coal[9][9].
>
> 5. Fly ash has been exempt from hazardous waste toxicity regulations by
>
> US EPA and is listed as a "non-hazardous waste" for its end of life
> management. US EPA however acknowledges that coal fly ash contains mercury
>
> and other quantities of toxics. US EPA on its website acknowledges that the
>
> mercury can be potentially released into the air[10][10]. US EPA's website
> states that they plan to reassess the ash rules shortly after they
> promulgate their new Clean Air Mercury Rule (CAMR) a rule that will require
> significant reductions in mercury emissions from coal-fired power plants
> into communities across the US. There currently are no Federal regulations
> requiring mercury capture from coal burning plants but devices that can
> capture mercury have been designed and installed for demonstration (EPRI) in
>
> anticipation of the CAMR[11][11]. In the interim before the CAMR is
> implemented, mercury concentrations in coal fly ash go completely
> unmeasured, and unregulated in beneficial reuse products.
>
> 6. Mercury concentrations in fly ash vary due to the variations in
> mercury found in the geological coal deposits and due to the different types
>
> of air pollution controls installed on coal burning power plants throughout

> the US.
>
> Release of mercury from coal fly ash.
>
> 7. The DOE/NETL in a memo dated April 2006[12][12] discusses some of
> the issues of mercury in coal fly ash. On page 4 it is confirmed that the
> environmental impact studies are not yet complete. The 2005 memo states,
> "DOE/NETL is carrying out research directed at evaluating the fate of
> mercury in coal combustion byproducts and developing ways to ensure that the
>
> mercury is not released."
>
> 8. DOE/NETL clearly recognizes that leach testing is not the only test
> needed to assess mobility impacts. They recognize and have begun
> establishing testing protocols for three primary means for mercury to be
> released from coal fly ash: aqueous transport via direct leachability, 2)
> vapor-phase release at ambient and elevated temperatures, and 3)
> biologically induced leachability.
>
> 9. Release mechanisms of mercury from coal fly ash is complicated by
> the different mercury species that are inherent in coal fly ash and by
> chemical interactions that may occur within concrete -coal fly ash mixtures.
>
> 10. Mercury has been found to be release from coal fly ash into air at room
>
> and elevated temperatures. Specifically, EERC studies have reported the
> mercury releases from fly ash[13][13]. EERC has studied the mercury content
>
> of a large number of coal combustion fly ash samples submitted by industry
> representing various types from different coal mining areas in the
> US.[14][14]
>
> 11. Importantly mercury was also found to be emitted from the wet
> ash[15][15] Experiments that included the addition of water to the samples
> exposed to air resulted in a increases in the Hg flux results.
>
> Fly ash Mixed with Flue Gas Desulfurization (FGD) scrubbing sorbents:
>
> 12. Many power plants have air pollution control devices installed that
> inject dry flue gas desulfurization sorbents to capture SO2 and NOx gas
> pollutants. These powder sorbents are captured and mixed with some grades
> of flyash.
>
> 13. Mercury has been found to be in fly ash FGD mixtures in concentrations
> of 39 and 70 ppm in sorbent materials that are mixed together in coal fly
> ash as reported by DeVito and Rosenhoover[16][16] and DeVito[17][17] for
> two FGD materials. Recently, the EERC reported that the mercury content of
> fly ash and FGD collected during tests of mercury control technologies are
> significantly increased; samples containing a total mercury concentration
> as high as 120 ppm were reported.
>
> 14. The re-release of mercury from coal fly ash mixed with FGD has been
> evaluated on a limited basis. EERC reports that calcium-based FGD systems

> are expected to remove oxidized mercury from flue gas at varying efficiency
> levels. Results of thermal desorption tests indicate that mercury is
> thermally released from sorbents at temperatures considerably below the peak
>
> temperatures observed for fly ashes. Significant percentages of the mercury
> captured on the saturated sorbents were reported to be released upon heating
>
> above 135°C (275°F).
>
> Concrete reactions with adhesives and mastics:
>
> 15. Attached is copies of documented studies showing that some adhesives in
>
> contact with concrete can facilitate the migration of plasticizer into
> concrete. Additionally in these instances concrete has been found to react
> with plasticizers and resulting in concrete emitting toxic volatile
> emissions. Although theses studies do not provide any specific data about
> toxic emissions from concrete-ash mixtures they do provide corollary
> information that concrete can and has emitted toxics held within concrete
> matrices into indoor air.
>
>
>
> Discussion and Conclusions
>
> Clearly there is no dispute that the toxic compounds found in fly ash if
> mobilized pose could pose a serious threat to children and teachers indoors
> and that the current hazardous waste rules do NOT address this issue. What
> remains unanswered is whether or not the toxic compounds in ash in concrete
> are sufficiently anchored into concrete under conditions of use proposed for
>
> building schools and will prohibit them from being emitted into the indoors.
>
> Reviewing the literature indicates that there is a lack of sound
> scientific data to ascertain the level of risk of concrete mixed with coal
> fly ash for children in schools. The rule of thumb that I've seen used
> with respect to green building materials has been to conduct emission
> testing of building materials when there is evidence that the material may
> emit toxic quantities contained in it.
>
> Although there is limited leach testing data in the literature the coal fly
> ash being sold in CA has not been leach tested to ascertain CA toxic leach
> characteristics since there is presently no leach testing certification
> program for coal fly ash. Furthermore leach testing is not the testing used
> to addresses mechanisms of transport into air. Leach testing is designed
> to show that toxic compounds will not leach out of a landfill and pose
> threat to waterways.
>
> Do Pozzolonic forces hold mercury from being released into the air?
>
> The proponents of the technology will waive their "pozzolonic" flags
> asserting that the pozzolonic concrete reactions and forces are adequate to
> hold mercury in and prevent it from being emitted!! However there is not

> currently any direct applied data to support such claims. There is no data
> to substantiate that concrete coal fly ash mixtures subjected to moisture
> and heat does not emit toxics including mercury. Because there is
> literature showing that emission testing of coal fly ash, and coal fly ash
> mixtures with flue gas desulfurization (FGD) by-products both resulted in
> measurable mercury releases into the air precaution should be taken.
> Sufficient and adequate scientific information to assure that its use in
> schools with children is safe is needed.
>
>
>
> More environmental impact tests are needed including IAQ
>
> Actions are needed to partner with the fly ash Centers and industry to
> conduct proper testing and provide data on the vapor phase mobility of
> mercury and other toxics from flyash under school scenario conditions of
> moisture, heat and contact with mastics used in applications on slab. The
> studies of the safety of concrete-coal fly ash mixtures are not yet complete
>
> and there is insufficient data showing that these materials do not emit
> toxic mercury into indoor environments. Since Mercury, is a toxic compound
> for which exposures to children should be minimized it is best to take
> precaution and wait for studies to be conducted or commission screening
> tests such that decision to use these materials in schools may be made with
> proper and adequate data before taking any action that might endanger the
> health and safety of children in CA schools. It might be argued that
> concrete-ash mixtures have been leach tested shown minimal toxic mercury
> risk. But a strong counter argument to consider is that the very limited
> leach tests found in the literature to date do not directly address
> volatilization and mobility of mercury from concrete-ash mixtures into
> indoor air. Leach tests are not indoor air tests and are designed to look
> at leaching into landfill leachate not into classroom air and children's
> lungs. The mercury leach tests do not consider scenarios where there may be
>
> thin surface layers of moisture on concrete-ash mixtures nor do they
> consider chemical interactions from the case where concrete ash mixtures are
>
> used in combination with flooring adhesives for applications with resilient
> or carpet flooring. What is missing from published literature is indoor air
>
> chamber test data to verify that there is are no toxic mercury emissions
> under the conditions of heat, moisture and combination contact with mastics
> coming off of the concrete/ash products? Without this data there is no
> sound argument that these building materials are mercury emission free and
> safe for use.
>
> As far as the IAQ screening tests, the following is the suggested testing
> that could answer the question. Obtain ash from a known power plant that
> burns coal with percentages of mercury and other common ash toxics (dioxins,
>
> arsenic, etc). Preferably work with the coal ash center in North Dakota to
>
> obtain these samples. Try to obtain worst case concentrations. Then work

> with a local LEED practitioner in CA that has experience forming concrete
> with ash and have them form samples for lab testing. Chamber test under
> common conditions of moisture, contact with carpets and monitor mercury and
> other toxic emissions to ascertain if there is or is not any mobilizations
> of the toxics into the air.
>
>
>
> Precautionary conditions if it is added to Table A3
>
> If the committee should choose to include coal fly ash in Table A1 I'd like
> to propose that its use be limited to applications that might not involve
> direct contact with children's skin, food, phthalate and soy based carpet
> backings, moisture, under floor heating or in any areas where mercury
> releases could indoor or sub floor areas where it could vaporize and seep
> through the floors and into indoor air. I suggest it not be selected for
> use on playgrounds where skinned knees may happen or on food preparation
> surfaces (Note that concrete countertops are gaining popularity and soon ash
>
> laced countertops may become hip in schools too!)
>
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> _____
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>
>
> Antoinette "Toni" Stein, Ph.D.
> Air Pollution Research Specialist
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> From: Papke, Dana [mailto:DPapke@CIWMB.ca.gov]
> Sent: Thursday, June 08, 2006 4:52 PM
> To: Ken McIntosh; Tom Lent; Dennis Bottum; Dennis Bradway; Eric Shamp; Jim
> Ogden; John Zinner; kritchie@scscertified.com; Tom Phillips; Stein, Toni
> (DHS-EHLB); Williams, Clark@IWM; Ying Wang; Orr, Bill@IWM
> Cc: David Goldman

> Subject: CHPS Materials Subcommittee - Coal Fly Ash Issue
>
> CHPS Materials Subcommittee:
>
>
>
> Please see the attached fact sheet, web links, and comments on coal fly ash
> that were forwarded to me directly. This is also a reminder to send me an
> email with your vote to include or exclude coal fly ash from Table A3 no
> later than 10 a.m. PST tomorrow, June 9th.
>
> Coal Combustion Products Partnership
> www.epa.gov/epaoswer/osw/conserve/c2p2/index.htm
>
> U.S. EPA's Environmental and Health Information
> www.epa.gov/epaoswer/osw/conserve/c2p2/use/effects.htm
>
> Comments received from Russ Majors of Boral Material Technologies, Supplier
> of Fly Ash:
>
> * "Fly ash is not a pollution control byproduct. It is the coalesced
> inorganic residue resulting from the combustion of coal
> * It is trucked into the State of CA (most by rail) because the State
> of CA
> requires that it is used in all of their DOT concrete projects. It has
> nothing to do with more or less stringent air pollutions laws as suggested
> to the Materials Subcommittee.
> * Comments were made that heavy metals may be leaching out of fly ash.
>
> People should be aware that fly ash is a glass matrix and TCLP results show
> these metals, even if part of the glass matrix, are not available for
> leaching.
> * There are no volatiles in fly ash or concrete as they are inorganic
> systems. No way this material is off gassing in any form."
>
> Please let me know if you have any additional comments or questions.
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>
> Thanks,
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>
> Dana
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> Dana Papke
> Sustainable Building Program
> California Integrated Waste Management Board
> P.O. Box 4025, MS 12
> Sacramento, CA 95812-4025
> Phone: (916) 341-6496

> Fax: (916) 319-7121
>
> http://www.ciwmb.ca.gov/GreenBuilding
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>
> [1][1]Other applicable experience that relates to this topic area: I have a
>
> PhD in Air Quality Control from the University of Cincinnati in Ohio. My
> dissertation research was co-funded by the Electric Power Research Institute
>
> and the Public Service of Colorado, investigating flue gas desulfurization
> (FGD) reaction pathways of dry sorbent air pollution control technology for
> coal burning power plants. My work at DHS is focused primarily on green
> building materials, toxics, and supporting statewide policy to protect
> public health in schools, commercial and residential buildings. Prior to
> joining DHS I co-founded the Zero Waste Taskforce of San Mateo, Santa Clara,
>
> and San Benito Counties working directly with South Bay communities to
> eliminate, wastes, and promote recycling and reuse and served a 3 year
> appointment on the BAAQMD's Hearing Board . Additionally I did a year
> post-doctorial appointment studying policy decisions and toxics of
> electronic wastes for a program out of UC Davis/Irvine. These e-waste
> studies led me to investigate the toxicity of MSW ash from CA's three MSW
> incinerators (Long Beach, Commerce, and Crows Landing) and applicable
> hazardous waste regulations.
>
> [2][2] http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html
>
> [3][3] http://www.oehha.ca.gov/air/acute_rels/allAcRELs.html
>
> [4][4] XAFS investigation of Hg sorption on fly-ash
> <http://www.flyash.org/1999/ashpdf/hugg1.pdf> , Hutton et al.
> http://www.flyash.org/1999/ashpdf/hugg1.pdf ,
> http://www.netl.doe.gov/technologies/coalpower/ewr/mercury/emissions.html
>
> For those unfamiliar, the toxics come from the coal itself and from the
> combustion process where they are contained or entrained in the particulate
> fly ash that is captured in flue gas air pollution control devices.
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> [5][5] See US EPA's WebFire database of emission factors,
> http://cfpub.epa.gov/oarweb/index.cfm?action=fire.main
> <http://cfpub.epa.gov/oarweb/index.cfm?action=fire.main>
>
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>
> [6][6] http://www.energyjustice.net/coal/wastecoal/epa-icrdata.html
>
> [7][7]See the University of North Dakota's website on Hg in CFA at,
> http://www.undeerc.org/carrc/html/Mercury.html

> <http://www.undeerc.org/carrc/html/Mercury.html> .
>
> [8][8] .
> http://www.ceamercuryprogram.ca/EN/Pdf/Comparison%20of%20ILS%20Results%20for
> %20Phase%202%20Samples.pdf
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> [10][10]
> http://www.epa.gov/epaoswer/osw/conserve/c2p2/use/concerns.htm#mercury
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> [11][11]

> http://www.epa.gov/epaoswer/osw/conserve/c2p2/use/concerns.htm#mercury
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> [12][12] DOE Memo found at:
> http://www.netl.doe.gov/technologies/coalpower/ewr/mercury/pubs/NETL%20Clari
> fication%20on%20Mercury%20FINAL%200406.pdf
> <http://www.netl.doe.gov/technologies/coalpower/ewr/mercury/pubs/NETL%20Clar
> ification%20on%20Mercury%20FINAL%200406.pdf>
> also see their website for their Hg program,
> http://www.netl.doe.gov/technologies/coalpower/ewr/mercury/index.html
> <http://www.netl.doe.gov/technologies/coalpower/ewr/mercury/index.html>
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> [13][13] Hasset et al. report Mercury release from fly ash from their
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> Presented at the
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> 17th Annual Pittsburgh Coal Conference, Pittsburgh, PA, Sept 11-14, 2000.
>
> Please make a note of The Carpet and Rug Institute's new street address,
> effective January 1, 2006:

>
> The Carpet and Rug Institute
> 730 College Drive
> Dalton GA 30720
>
> CRI has not moved, but the name of the street where our building is located
> has been changed. Our PO Box remains the same:
>
> The Carpet and Rug Institute
> PO Box 2048
> Dalton GA 30722-2048
>
> To sign up for CRI's newsletter, subscribe on our website at:
> www.carpet-rug.org/newsroom.cfm#subscribe
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