

EPA Comments

Comments on the TVA Kingston Public Health Assessment

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Summary Introduction, Page xvi: "...and is considered one of the worst environmental disasters in U.S. history." This phrase may be needlessly inflammatory. Consider rewording or deleting.

Conclusion 1, Page Page xviii: "the response from state and federal agencies has continued, and will continue until the area is returned to the conditions existing before the coal ash release." EPA has not yet selected a remedy for the site and cannot commit to the restoration of the site to a "background" condition. Please delete this and similar statements in later sections.

Conclusion 4, Page xxi: "The concentrations of metals in the coal ash, except arsenic, are below levels known to cause harm if eaten." This is a very general statement that should be expanded upon (e.g., Based on what criteria? Over what time period (acute or chronic)? Etc.).

Conclusion 8, Page xxv: "The Tennessee Department of Environment and Conservation and the Tennessee Wildlife Resources Agency advise avoiding consumption of striped bass and limiting consumption of catfish and sauger. The pollutants of concern are polychlorinated biphenyls (PCBs) and mercury from historical activities." This advisory appears to be unrelated to the coal ash release and may be confusing. Discussion of the advisory should be more explicit in indicating that the existing advisory is based upon prior environmental issues.

Conclusion 14, Page xxxii: "the Tennessee Department of Health concludes that many residents living in the area of the coal ash release experienced stress and anxiety. Some residents reported respiratory symptoms after the ash release." However, the "next steps" portion of the Conclusion indicates that TDH encourages people to see their primary care physicians only about mental health concerns. The Conclusion reads as though TDH believes that the 40% of respondents who reported respiratory problems since the release are reporting psychosomatic illnesses, which I don't think is the intent of the conclusion. For clarity, recommendations concerning mental health and other health issues should be addressed separately. In addition, all who have concerns about health related problems that they believe is related to the release should be similarly directed to their primary care physicians.

Conclusion 15, Page xxxiii: The text indicates two problems have been reported, dust issues and respiratory issues, but provides a path forward for only one of the problems (dust). Both issues should be addressed in the conclusion.

Footnote 1, Page 2. For clarity, the footnote on cenospheres should include detail that the cenospheres are chemically inert and are not toxic.

Page 3: the text states, “On January 11, 2009, EPA transferred the role of lead federal agency to TVA and demobilized all remaining personnel and equipment from the site.” The text should explain the reason for this handover, i.e., transition from emergency response phase to long-term operations. This summary of the site chronology omits EPA’s subsequent Administrative Order and resumption of the role of lead Federal Agency. EPA’s ongoing role in the cleanup of the site should be included in this section.

Page 4 and 5: ATSDR’s “Activity Documents” should be defined.

Page 5: The text states, “This PHA will only address human health. It will not include any discussion of the ash’s impact on wildlife, domestic animals, or water quality as it affects fish and aquatic life. It will not determine the cause of any personal health symptoms.” It may be helpful to direct readers to any existing or forthcoming investigations that will address the eco and personal health issues as these may be significant concerns to some readers.

Page 5: “a receptor population” – in our experience the public has recently reacted negatively to being referred to by the depersonalized term “receptor”. The authors may want to consider “exposed individuals/population” or similar wording

Page 7: For clarity, it should be mentioned that the definitions for acute, intermediate, and chronic are those used by ATSDR and TDH. EPA’s definitions for these terms differ.

Page 7: Consider rewording or deleting - “People are seldom exposed to an environmental contaminant constantly for over a year.” Local residents who feel that they have been continually exposed will point out that is almost a year since the release occurred in their community.

Page 8: “If the concentrations of chemicals found in soil, ash, air, surface water, or groundwater are less than any health comparison values, we are sure that those chemicals will not cause harm to anyone.” This statement reads as an absolute and with much more certainty than EPA would be generally willing to support. It is recommended that this sentence be changed to “reasonably sure” or similar qualified statement.

Page 12: It is recommended that the term “syndromic surveillance” should be defined in this section. It does not appear to be defined until Page 63.

Page 12: The text states, “Aluminum, arsenic, barium, cadmium, calcium, and iron concentrations in KIF’s coal ash were higher than in soil, that is, they were enriched. On average, concentrations of copper, magnesium, and manganese were lower in KIF’s coal ash than in soil, that is, they were depleted.” “Enriched” and “depleted” implies that metals were added or removed artificially or on purpose. For clarity, consideration should be given to limiting comparisons to being either higher or lower.

Page 13: “This public health assessment will focus on the public health implications of the coal ash release and will not focus on worker exposure.” Consider adding a quick reference to the laws/regulations/agencies that protect workers.

Page 15: “Statistical analysis of the soils data indicated that in 95% of samples, arsenic concentrations were less than or equal to 20 ppm (Head 2006).” For clarity, it should be noted that this refers to the statistical evaluation of state-wide arsenic data and not the TVA soil data.

Page 16: The text states, “EEP followed EPA Region 4’s advice to use EPA Region 3’s Regional Screening Table for a health comparison value for iron.” Although maintained on Region 3’s web site (as well as those of several other regions), the screening values are properly referred to as “Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites.” (Same comment for Thallium discussion on Page 17 and other subsequent mentions to Region 3 values).

Page 21: “EEP will only address concerns about public health and will not address any concerns ecological issues in this public health assessment.” Again, a reference to existing or planned ecological risk assessments is recommended to help direct public concerns.

Page 23: “On December 23, 2008, the concentration of dissolved arsenic was estimated to be 11.6 µg/L, slightly above the water quality criteria for domestic water use.” It is not clear from this section where the elevated concentration was collected. A river mile marker should be provided to be consistent with the data presentation in subsequent sections. Also, throughout the river water sampling section, the distinction between total and dissolved metals is not discussed. The distinction between these sample types, as well as total suspended solids, should be presented more fully in this section. The purpose for taking both types of samples should also be presented.

Page 27: “After heavy rains in May 2009, ash reached the intake to the Kingston Water Treatment Plant.” The text should discuss how this was determined as well as any implications to that may have resulted.

Page 37: The text states:

“Airborne silica in ambient air in Italy and other Mediterranean countries comes from sand in the Sahara desert. De Berardis et al. found that silica contributes about 5% to 6% to PM10 in Rome’s ambient air. The silica component is

much lower (10 times to 100 times) than the ACGIH standard of 25 µg/m³. Public health will be protected from inhalation of silica at the coal ash release if PM2.5 and PM10 NAAQS are met in the monitors surrounding the coal release site.”

The logic in this statement is difficult to follow. It seems to suggest that airborne silica from Saharan sand is roughly equivalent to silica in coal ash, which would equate the percentage of silica in Mediterranean PM10 to the percentage of silica in Kingston coal ash PM2.5-10. This assumption doesn’t appear to be supported in the text, although it does follow a detailed description of approximate percentages of silica in coal ash. Additional discussion may be needed for clarity.

Page 42: “From December 28, 2008, through May 31, 2009, CTEH took 47,908 real-time air samples with hand-held meters. They are continuing to take samples every day. Of these samples, 216 (0.4%) samples were greater than 100 µg/m³ and 60 (0.1%) samples were greater than 150 µg/m³.” It is not clear from the discussion if PM2.5, PM10, or something else was sampled by CTEH. Additional description of the sampling conducted should be presented in this section.

Page 59: “TCLP analyses of ash by governmental agencies indicated that very little leaching occurred when the ash was analyzed by standard EPA TCLP methods. These methods are the only acceptable procedure for TCLP analysis.” For clarity, it should be made clear for whom the analysis is the only acceptable procedure for.

Page 60: “The preliminary report emphasizes elevated selenium concentrations in river sediment and harm to fish. Environmental regulatory agencies are concerned with the health of the ecosystems and fish in the Emory River. However, as stated earlier, this public health assessment will focus only on human health.” This may be another place where mention of the timing and process for ecological risk assessment studies could be made.

Page 67: “Hot spots for vomiting occurred in a tight cluster to the northwest of the spill. Because of the tight clustering, vomiting could have been a result of a viral outbreak, which is common in winter, rather than a result of the ash release.” The description of the geographic area is similar to that described for the clustered reports of anxiety. It is unclear why a viral outbreak appears to be the preferred explanation for the vomiting. It seems equally likely that anxiety may be just as likely to cause the reported vomiting. Given the uncertainty, it may be prudent to provide a variety of potential causes.

November 23, 2009

Mr. Craig Zeller

Remedial Project Manager/Task Order Manager

U.S. Environmental Protection Agency, Region 4

61 Forsyth Street S.W., 11th Floor

Atlanta, GA 30303-3104

Subject: Technical Review Comments

Draft Public Health Assessment for Coal Ash Release, Tennessee Valley Authority (TVA) Kingston Fossil Plant, 714 Swan Pond Road, Harriman, Roane Oak County, Tennessee. October 2009

DCN 49002-0170-05-A-00136R0

Reference: EPA Contract EP-S4-09-02, Task Order 002

BVSPC Project 049002.01.7

Dear Craig:

Black & Veatch Special Projects Corp. conducted a technical review of the Public Health Assessment for the Coal Ash Release, Tennessee Valley Authority (TVA) Kingston Fossil Plant, 714 Swan Road, Harriman, Roane County, Tennessee dated October 30, 2009, prepared by the Agency for Toxic Substances and Disease Registry.

The document was well written and easy to follow. The following minor comments are offered for consideration.

1. Page 6, Section: Health Comparison Values, Paragraph 1. The document states "EEP and other environmental public health organizations use health comparisons values to help them make determinations about the contaminants in the

environmental and their impact on public health”. This sentence should be corrected as follows: “EEP and other environmental public health organizations use health comparisons values to help them make determinations about the contaminants in the environment and their impact on public health”.

2. Page 12, Section: Coal Ash, Introduction, Paragraph 3. The document states that “..Aluminum, arsenic, barium, cadmium, calcium, and iron concentrations in KIF’s coal ash were higher than in soil”. The tables for which this comparison is being made should be included in the document. On Table 2 (TVA Ash Sampling), the maximum concentration for iron is 39,700 mg/kg and on Table 5 (TDEC Soil Sampling) the maximum iron concentration is 41,000 mg/kg. The concentration of iron in the soil is greater than the concentration in the coal ash. This discrepancy should be corrected.

3. Page 3, Section: Sampling, Paragraphs 3 and 4. The document states that Figure 3 provides the soil and ash sample locations for the various agencies. However, Figure 3 presents the overview of the river systems near the KIF coal ash release, with water intakes. This discrepancy should be corrected.

4. Page 14, Section: Analytical Results. This paragraph discusses how the method detection limits (MDLs) were treated due to the lack of MDLs for some of the data. The document concludes that the approach had no affect on the conclusions about the health hazards. However, since uncertainty and bias are introduced into the process when this type of approach is applied, additional information should be included as part of the discussion.

5. Page 14, Section: Soil. The document states “Soil was tested to find out if the coal ash had contaminated soil. Analysis of the EPA shoreline soil samples (Table 3) collected from December 28, 2008 to January 9, 2009, and TDEC’s soil samples indicated that all metals in the samples were below health comparison values for all constituents, including arsenic. However, the maximum concentration for arsenic (34 mg/kg) exceeded the health comparison value (20 mg/kg). Also, the maximum concentration for manganese (4,160 mg/kg) exceeded the health comparison value (3,000 mg/kg).

6. Page 14, Section: Ash, Paragraph 3. The document states “Arsenic concentrations in the ash ranged from 56 mg/kg to 100 mg/kg, with an average concentration of 78 mg/kg”. The sentence should be corrected to “Table 6 arsenic concentrations in the ash ranged from 56 mg/kg to 100 mg/kg, with an average concentration of 78 mg/kg”.

7. Page 18, Section: Incidental Ingestion, Paragraph 3. The document states “Arsenic was the only metal in the fly ash found above health comparison values (see Tables 2, 3, 4, 5, and 6) by all three agencies, TVA, EPA , and TDEC.” However, on Table 3, the maximum concentration (34 mg/kg) exceeded the health comparison value (20 mg/kg). Also, Tables 2, 4, and 6 include ash sampling analytical results and Tables 3

and 5 include soil sampling analytical results. The text should be modified to highlight the correct information.

8. Page 19, Last Paragraph. The document states “Since the ash is not easily accessible and because the public health message to avoid contact with the ash has been widely publicized, no continued ingestion is ash is expected for residents of the area”. The sentence should be corrected to state: “Since the ash is not easily accessible and because the public health message to avoid contact with the ash has been widely publicized, no continued ingestion of ash is expected for residents of the area”.

9. Page 24, Section: TDEC. The water quality criteria and action level for the compounds discussed in this paragraph (i.e., arsenic and lead) should be added to the document.

10. Tables 2, 3, 4, 5, and 6. The health comparison value for hexavalent chromium is included on the table. However, the samples were analyzed for total chromium. This distinction should be indicated in the table.

11. Table 3. The title of the table should be changed to: “Analytical results, EPA soil sampling. Soil results in milligrams per kilogram ash (mg/kg). Kingston Fossil Plant, Roane County, Tennessee.

12. Tables 7 through 19. The reporting limits should be added to these tables, if available.

13. Tables 20 through 23. The water quality criteria and action level should be added to these tables.

If you have any questions or require additional information, please feel free to contact me by telephone at 770-715-3572 or via email at montgomerygk@bv.com

Sincerely,

BLACK & VEATCH SPECIAL PROJECTS CORP.

Gina Kelly Montgomery

Human Health Risk Assessor

cc: Charles Hayes, EPA Contracting Officer

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#	Page number	Change	Comment
1	ix	Remove CTEH from list.	Probably best to remove contractors CTEH and START Tetra Tech names from report to funnel all questions through appropriate agencies instead of inquiries to individual contractors. Data and information throughout report sound fine with just agency name.
2	xv	Remove START from list.	Same as Comment 1.
3	xv	Add SESD to list.	Science and Ecosystem Support Division
4	xxii	Add Emory River Closure.	On August 11, 2009, EPA in conjunction with TDEC and TVA closed the Emory River. River will continue to be closed through February 2010. For exact wording, visit www.epakingstontva.com .
5	xxiii	Remove contractor in second paragraph.	Same as Comment 1.
6	xxv	3rd paragraph, what are the historical activities attributed to?	In this context, historical activities sound like they are attributed to TVA. If it's not attributed to TVA, it could use some clarification.
7	xxvii	5th paragraph, "breathing in other dusts", what types of other dust?	Needs some clarification. Probably just add "household dust" and it would make sense.
8	xxxi	Last paragraph, "should continue to investigate the issue of selenium...", 2 reports have been published	EPA Science Review Panel and US Army Corp of Engineers/ERDC generated 2 reports on selenium impacts at the site. These reports with their executive summaries can be found at www.epakingstontva.com under Selenium Reports.
9	xxxi	3rd paragraph, last sentence, "releases" should be "release"	There has only been 1 release at the site.
10	2	2nd paragraph under Response of Gov'l Agencies, remove "contractor, Tetra Tech", remove "Tetra Tech...(START) contract.", and Tetra Tech definition in right column.	Same as Comment 1.
11	3	3rd paragraph, remove "Tetra Tech...assistance", replace "Tetra Tech specifically" with EPA.	Same as Comment 1.
12	3	4th paragraph, replace Tetra Tech with EPA.	Same as Comment 1.
13	3	5th paragraph, replace Tetra Tech with EPA.	Same as Comment 1.

14	3	Right column, remove Tetra Tech.	Same as Comment 1.
15	6	1st paragraph under Health Comparison Values, "environmental" should be environment.	
16	13	2nd paragraph under Sampling, remove "contractor, Tetra Tech,", replace "Tetra Tech collected seven.." with "EPA collected seven...", replace "(Tetra Tech 2009)" with (EPA 2009).	Same as Comment 1.
17	13	Remove Tetra Tech from right column.	Same as Comment 1.
18	19	Last paragraph, "no continued ingestion is ash is expected..." should be "no continued ingestion of ash is expected".	
19	21	2nd paragraph, "will not address any concerns ecological issues..." delete concerns.	
20	22	2nd paragraph, delete "had their contractor, Tetra Tech,". Replace Tetra Tech with EPA on rest of page. Remove Tetra Tech from right column.	Same as Comment 1.
21	23	2nd paragraph under EPA, 6 ugL should be 6 ug/L.	
22	24	1st sentence, "sampling points on the on each...", delete "on the."	
23	25	Add River Closure.	See Comment 4.
24	26	Add River Clouse map and put white box over contractor logo at bottom of map (OTIE-TN&A).	See Comment 1 and 4.
25	27	Remove Tetra Tech from right column. 1st paragraph under Public Drinking Water Sampling, replace Tetra Tech with EPA.	Same as Comment 1.
26	38	In Dates column for TVA portable, real-time; change Dec 38 to Dec 28.	
27	39	2nd paragraph, removed contractor CTEH and remove from right column.	Same as Comment 1. CTEH is also no longer on-site as air monitor contractor.
28	40	1st paragraph, replace CTEH with TVA. Remove CTEH from right column.	Same as Comment 1.
29	40	2nd to last paragraph, replace "was" with "at" before 0.0039.	

30	42	1st paragraph under Real-Time Results, replace CTEH with TVA. Remove CTEH from right column.	Same as Comment 1.
31	44 - 45	1st paragraph, delete "used Tetra Tech to", change conduct to conducted. Replace Tetra Tech with EPA through rest of section including references. Remove Tetra Tech from right column on both pages.	Same as Comment 1.
32	46	2nd paragraph under TDEC Analytical Results, "and have no shown no effect from the coal ash release." should be "and have no shown effects from the coal ash release."	
33	48	3rd sentence, remove "and". The results will be discussed after the table.	
34	51	1st paragraph under Real-Time Sampling, replace CTEH with TVA. Remove CTEH from right column.	Same as Comment 1.
35	56	3rd bullet, River Closure update.	See Comment 4.
36	60	3rd paragraph, published Selenium Reports. 4th paragraph, River Closure update.	See Comment 8 and 4.
37	61	Last paragraph, River Closure update.	See Comment 4.
38	62	4th paragraph, River Closure update.	See Comment 4.
39	73	Conclusion 5, River Closure update.	See Comment 4.
40	74	Conclusion 6, delete contractor.	Same as Comment 1.
41	74	Conclusion 8, River Closure update.	See Comment 4.
42	75	Conclusion 10c., 4th paragraph, 4th sentence, change "using " to "conducted".	
43	76	Conclusion 13, bottom of 1st paragraph, published Selenium Reports.	See Comment 8.
44	79	Recommendation 5, River Closure update.	See Comment 4.
45	80	Recommendation 6, "If any at any time..." delete first "any".	
46	85 - 86	(Tetra Tech 2009), replace with (EPA 2009). Remove "Tetra Tech EM Inc.,Team Region 4." Delete "EPA Contract No...Prepared for." Keep U.S. EPA, Region 4, Em. Resp. and Rem. Branch.	Same as Comment 1.

47	88	Fig. 1, Date on pre-spill aerial is not Dec. 23, 2008. I think it is June 2008.	
48	89	Fig. 2, 2nd sentence font is different.	
49	90	Fig. 3, Tennessee River label next to I-40 should be Clinch River. Kingston water treatment pin should be on opposite side of river.	See Figure 7 for correct treatment plant locations.
50	93	Fig. 6, put white box over contractors names.	Same as Comment 1.
51	94	Fig. 7, make text of figure bold.	
52	98	Fig. 11, put white box over contractors names.	Same as Comment 1.