

Figure 9, EPA Site Reviews
(See attached)

Evaluation of Critical Public Facility sites by USEPA

Hospital Site

The Hospital was evaluated using two standard practices. Visual observations and sampling with a Portable X-ray Fluorescence (XRF) instrument. Visual observations look for lack of substantial vegetation, in known mining areas this is indicative of elevated levels of mine waste. Observance of chat like materials is also indicative of elevated levels of mine waste. Mine waste levels of 800/400 parts per million lead (Pb) (see the attached Lead Protocol), Zinc (Zn) at elevated levels for terrestrial contamination and elevated levels of Cadmium (Cd) at levels exceeding 75 ppm.

Visual observations indicated no observable mine waste in the immediate area. Since the area had been dozed vegetation was not observable, however surrounding areas had substantial vegetation.

The following sampling data, obtained by use of standard sampling protocols using the NITON XRF, indicate no **levels of mine waste which exceed a health concern for humans, to include children.** (levels of concern are based on Site Risk Assessment data previously generated)

Hospital Site					
	Pb	Zn	Cd	(ppm)	
1.	240	589	LLD	N37.05780	W094.52641
2.	484	363	LLD	N37.05774	W094.52608
3.	469	543	LLD	N37.05768	W094.52602
4.	108	417	LLD	N37.05755	W094.52668
5.	274	2281	LLD	N37.05746	W094.52689
6.	20	66	LLD	N37.05716	W094.52766

EPA Evaluation of St.Johns Hospital Expansion/Rebuild Site
5 July 2011

The evaluated site, which is located south of the current temporary hospital facilities, has a great deal of major vegetation, much of which has been impacted by the tornado. A walking, visual observation and sampling for mine waste remnants occurred at the accessible areas of the site.

The site has multiple features that indicate prospect mining occurred historically. There does not appear to be a great quantity of mine waste spread across the property, leading to the conclusion that most activity involved prospect mining. There does exist a limited number of overburden rock piles, adjacent to subsidence/collapse or mined features. The absence of quantities of “chat” or “tailings” indicates that limited quantities of ore would most likely have been taken to another site for processing.

Please find the sampling data collected on this date from the site. Most of the samples were taken adjacent to a subsidence/collapse feature.

Lat , Long	Lead or Pb ,	Zinc or Zn,	Cadmium (Cd) (all in parts per million, ppm)
1. 37.05669N, 94.52559W,	471;	355;	depression filled with concrete made of chat
2. 37.05682N, 94.52529W	353,	635;	area with rocks on surface and depression
3. 37.05647N, 94.52614W	73	114	depression or mine shaft feature
4. 37.05667N, 94.52683W,	49,	111	depression or mine shaft feature
5. 37.05674N, 94.52773W,	147,	703	depression or mine shaft feature
6. 37.05769N, 94.52834W	459,	708	not a pit; area along hospital roadway curve
7. 37.05556N, 94.52791W,	177,	13,000,(Cd 76),	not a subsidence pit, along dirt road
8. 37.05546N, 94.52625W,	2,587,	30,000 –	along power line.

9. 37.05585N, 94.52655W, 1,637, 2,343 - subsidence hole N of #8

10. 37.05570N, 94.52676W, 1,156, 1,132 - subsidence hole/mine shaft 4 to 6 feet deep

As the data indicates, and primarily adjacent to the mining features along the southern portion of the site, levels of lead are elevated above remediation criteria. The EPA and Missouri

Residential Cleanup level, based on risk assessment data, is 400 ppm lead. (Zinc is primarily a terrestrial hazard, but high levels can be indicative of mining activities). Cadmium cleanup values for Missouri non-residential sites is 60 ppm.

Although the data indicates elevated levels in select areas, and adjacent to the observed mine remnants, the process of clearing of the site may show other areas that are impacted by elevated levels of lead.

These areas however would/should be placed into a “remediated” status during construction activities.

The definition of “remediated” would mean areas with averages above 400 ppm lead would be covered in concrete, asphalt, clay of 6” or more with topsoil cover or a topsoil cover of at least 6”-12”, and in an area that would not be disturbed in any other way.

If you should have further questions or need assistance please do not hesitate to contact me at 620-719-7072.

Bryant Burnett, MSHS
CPT, USPHS
USEPA, Region 7
SME Lead, Joplin Tornado