Finding unexpectedly radioactive whale bone fossils at a Rock + Mineral show, several years ago led me on this   
quest to find out why it was so.  
The below post, Message #14666, was from 2009. Later we discovered the reference to "Bone Valley " which   
led us to this year's discoveries at the actual site.   
<http://www.baysoundings.com/sum05/BoneValley.pdf>  
  
  
At the site in mulberry, we learned that the collection of fossils was NOT carried out as part of the mining effort.   
No doubt millions of bones were crushed in the phosphate extraction, which occurs in vast bulk quantities. Saved   
fossils came from independent paleontologists and collectors who scoured the public areas around the actual mines.   
Note in the photos the sign proclaiming "Felony to Enter".  
[http://www.qsl.net/k/k0ff//Phosphogypsum/](http://www.qsl.net/k/k0ff/Phosphogypsum/)

--- In [GeigerCounterEnthusiasts@yahoogroups.com](mailto:GeigerCounterEnthusiasts@yahoogroups.com), "Geo>K0FF" <GEOelectronics@...> wrote:  
>  
> A while back I did a report on a radioactive road that I had found in Las Vegas. The road material itself was radioactive but only in specific areas.  
> <http://tech.groups.yahoo.com/group/GeigerCounterEnthusiasts/message/428>  
>   
> <http://tech.groups.yahoo.com/group/GeigerCounterEnthusiasts/message/446>  
>   
>   
> Later I did a report on radioactive fossils that kept popping up at various rock and fossil shows around the country. The radioactive whale bones in particular seemed odd enough for me to add them to my collection and include them in the school display kit.  
>   
> <http://tech.groups.yahoo.com/group/GeigerCounterEnthusiasts/message/10235>  
>   
> <http://www.qsl.net/k0ff/Radioactive%20Fossils/>  
>   
> This last winter- 2009- our field trip took us to Florida for a month. Here we did some digging into various radioactive topics and   
> "dug up" a possible connection between the radioactive roadbeds and the radioactive whale bones.  
>   
> It seems that central Florida is the phosphate mining capital of the world. The phosphate is treated with sulfuric acid and becomes the water soluble fertilizer that farmers use on their crops. This region supplies 75% of America's needs and 25% or the world's needs.  
>   
> The byproduct of phosphate mining and processing is phosphogypsum, and this is where the radioactive connection comes in.   
>   
> "Phosphogypsum refers to the gypsum formed as a by-product of processing phosphate ore into fertilizer with sulfuric acid.   
> Phosphogypsum is radioactive due to the presence of naturally occurring uranium and radium in the phosphate ore.  
> Marine-deposited phosphate typically has a higher level of radioactivity than igneous phosphate deposits, because uranium is present in seawater.[1]"  
> <http://en.wikipedia.org/wiki/Phosphogypsum>  
> Now the same marine deposits that supply the phosphates are home to numerous prehistoric fossils. So much so that this region in Florida is dubbed "Bone Valley"  
>   
> <http://www.baysoundings.com/sum05/BoneValley.pdf>  
>   
> We know from looking at the periodic chart of the Elements that radium is in the same column as calcium and barium.   
> Because of this chemical similarity, these elements tend to be readily replaced by one another in nature. We have seen many instances where barium crystal have had  
> taken up considerable radium to become highly radioactive radiobarium. Apparently the radium is taken up by the bones as part of the fossilization process.   
>   
> The US EPA has forbidden the use of phosphogypsum in most all applications, especially the robustly radioactive marine deposit kind. One exception appears to be in the use as fill in making roadbeds:  
> <http://www.baysoundings.com/sum02/behind.html>  
>   
> We know that there is about a billion tons of this material stockpiled in Florida at the moment and 30 million more tons are added each year. I would expect that if the roadbed use is universally accepted, we will be noticing radioactive roadbeds all over the place soon.   
>   
>   
>   
> There is a small Phosphate Museum located in Mulberry FL:  
>   
> <http://www.mulberrychamber.org/attractions.htm>  
>   
>   
> Keep those LENis handy  
>   
>   
> Have fun  
>   
> Geo  
>

Just did an analysis of the dust/sand we collected from Mulberry FL earlier this year.

reference here:

<http://www.qsl.net/k/k0ff/Phosphogypsum/>

I believe what we are seeing is a case of dis-equilibrium brought about by the mining operation.

Normally radium as in a watch hand, will be well in equilibrium with the daughters, minus the radon gas that might have escaped over the years.

In such a situation, the Bi and Po K X-Rays are visible, along with strong peaks from the Pb-214 and Bi-214 decay ( Goldilocks and the 3 bears).

In this sample (attached)  from the Phosphogypsum region, we see a lot of Pb XRF X-rays ( the peak is lower than those for Pb-214 and Bi-214 X-Rays) while the higher daughters are week. This indicates to me a large constituent of stable lead, and Pb-210, which is exciting the lead atoms via beta bombardment.

Comments or alternative explanations welcome.

George Dowell