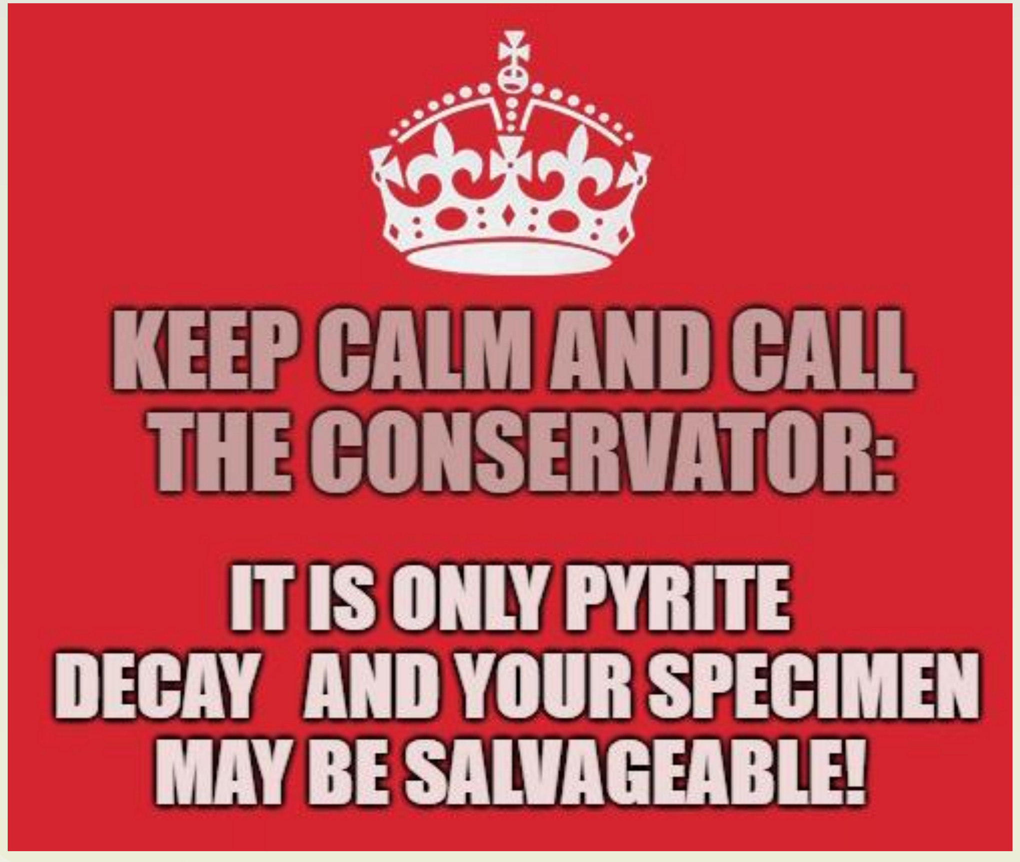

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Abstract

You may discover a specimen in your collection that is suffering from pyrite decay and it already appears to be too late to save it. However, a pile of ash-like substance in a card tray may look like it is destined only for the bin but careful cleaning and simple stabilisation techniques may reveal a useful specimen underneath.

Method

Ideally you would be able to prevent specimens from undergoing pyrite oxidation (pyrite decay) in the first place by maintaining appropriate environmental conditions in your collections area and/or using suitable storage media (see Larkin, 2011). However, some specimens are more susceptible to decay than others. With luck (and a good inspection regime) you will catch the decay in its early stages and be able to treat it appropriately. Sometimes, however, you may be presented with what looks like the worst case scenario and will be tempted to immediately de-accession the card tray of acidic dust – but you may not know which specimen it is that you need to deal with as the label may be within or underneath the ash-like by-product of decay.

Ideally, you would be able to treat the specimen to neutralize the acidity and halt the decay process by using either the Ethanolamine Thioglycollate technique or the ammonia gas technique (summarised in Larkin 2011) but both these procedures require specialist equipment and may be precluded by your health and safety regime.

The good news is that underneath the worrying pile of detritus from the decay process you may still have a specimen that is recoverable and useful. You – or your conservator if you are lucky enough to have one - should be able to clean the specimen using small artists paint brushes, tweezers, scalpels, wooden toothpicks and a gentle vacuum to remove the ash-like substance and any crust (wearing gloves, mask and googles and working in a dust extract if you have one). If it appears that it is the matrix that is the problem rather than the specimen it would be worth removing as much matrix as possible with scalpels and possibly with pneumatic preparation pens.

It would be at this point you would use either the ethanolamine thioglycollate technique or the ammonia gas technique to neutralize the specimen. But if you cannot do that you can still consolidate the specimen and undertake repairs (it may well be in pieces) using Paraloid B72 or a similar suitable adhesive/consolidant. Then, at the very least, take good photographs of the cleaned specimen for your records as it may deteriorate in the future. Consider making a mould of the specimen to preserve its current morphology (Baars, 2013) or maybe undertake photogrammetry or MicroCT scanning to record the specimen. Once recorded, place the specimen in a ziplock polybag so that if it does continue to decay it does not affect any other specimen or label. Treat the label so that it does not decay further (Stooshnov & Buttler, 2001) and sleeve it to protect it. Throw away the acidic card tray and use a new acid-free tray. Store the specimen in a way that ensures it does not get exposed to high humidity levels again (Larkin, 2011).

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Examples

Left: Before cleaning, consolidation and repair. **Right: After conservation**

(although the card trays have not yet been replaced)


Above, a partial ichthyosaur skull.


Above, a group of bivalve molluscs. Below, all ammonites.