

Instantaneous Identification of Asbestos using Artificial Intelligence

- **Idea**
 - o Cheap and quick identification of asbestos
 - o Portable and user-friendly
 - o Scalable
- **Background**
 - o Asbestos fibres cause asbestosis – scarring of the lungs making it hard to breath. Complications from asbestosis include cancer and heart disease.
 - o The three main types of asbestos (crocidolite, amosite and chrysotile) were banned from 1970's, 1980's and 2000's respectively. However, there is evidence to show that they remained in use even after the ban and were mixed with organic fibres which makes identifying the asbestos difficult.
 - o Australia has the second highest rate of mesothelioma, a rare cancer specifically caused by asbestos exposure, in the world.
 - o Because of the extended time period between asbestos exposure and the development of complications from this exposure, Australia is currently experiencing a peak in mesothelioma related deaths. Medical models show that the peak could continue till 2021.
- **Current methods**
 - o Sample must be sent to a lab. If the lab technician cannot conclusively say, through inspection, that there is no asbestos present. It must go through further testing.
 - o Testing in a lab is expensive
 - o Takes days to get results
- **New approach**
 - o phone app – familiar and easy to navigate
 - o An artificial neural network trained on thousands of images to identify the 3 main types of asbestos and organic fibres.
 - o Microscope attachment – cheap and portable. Fits over most phone types.
- **Current achievements**
 - o Patent for identification of asbestos using a phone and magnifier has been filed.
 - o A working neural network able to identify asbestos from phone camera pictures
 - o Collaboration/support from Bureau Veritas
- **Future Work**
 - o Expand the identification to more substances, making a general chemical identification app.

FEEDBACK

I think this is a really innovative idea and I love your thinking! The grading allocated to the content of the talk is a 50:50 split between the STEMM and the solution itself (the IMPACT). This includes things like the need, scope and scale, and feasibility. So, think about developing the details around these things a bit more. The way you have structured it is great. Have a look at the criteria again and develop your speech around that. Also, I think you have the opportunity to make some really nice simple slides to complement your talk, so spend some time on this to really engage the audience.