

All in a Day's Work

Fionnuala Ní Mhairtín - Geologist at the Geological Survey of Ireland

PROFILE

Fionnuala Ní Mhairtín studied geology in University College Cork. She went on to complete a Masters degree in Water and Environmental Management at the University of Brighton in England, before taking up her position as a geologist at the Geological Survey of Ireland, Ireland's National Earth Science Agency.



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A Day in the Life of Fionnuala Ní Mhairtín

Where do you work at present?

I am working on a project about old mines for the Geological Survey of Ireland (GSI). We are investigating old and abandoned mines in Ireland to see if they are polluting the environment. It is a great project as my duties involve lots of field work along with some laboratory and office work.

What does a day in the office involve?

A typical day in the office entails mostly computer work. I use GSI's old mine records as well as photographs taken from the air to plot old mine sites. I use a G.I.S (Geographical Information Systems) software package to produce maps. These maps help me to identify and investigate mine sites in the field. Also any information gathered from the samples we take in the field is entered into this GIS computer database.

What do you do in the field?

There is a lot of field work in this project as we have to gather all the information possible on the mines we visit. I examine each site looking for the metal content (i.e. pollution). Three different samples are collected at a number of places at each mine site. First I take a water sample from rivers and water coming from the mine. Then I take sediment samples (e.g. mud, sand or gravel) from the bed of the river. Finally I carry out waste analysis which is looking at spoil heaps and old areas worked in the mines.

Can you explain how samples are collected?

Collecting a water sample involves filling two bottles with water, one filtered and one unfiltered. I use a syringe with a small filter on the top to collect the filtered water. Unfiltered water is just filling a bottle from the river. Also at location of each water sample I have to take a number of readings, e.g. the temperature, the pH level, the electric

conductivity and the dissolved oxygen. This is done using two different meters. Gathering sediments involves taking sediment from the river bed through two different size sieves to get the very fine sediment. Sediment is sieved into a bucket and taken back to the lab. Finally I use an XRF machine which basically x-rays the mine waste to tell me what metals are in it and how much. All the spoil heaps and mine wastes around a site have to be analysed with this machine and I take some samples back to the lab.

What do you do in the laboratory?

The lab work which I do is based in the offices of the GSI where I analyse the sediment and the waste analysis samples. Firstly the samples have to be dried. This is simply done by placing them in an oven for a period of time. Following this, I normally crush the sample into a very fine powder. Then I can analyse it with the XRF machine. All the water samples are sent away to an outside laboratory for testing.

Do you travel much?

Yes, there are many mine sites to be found around Ireland. This means I have travelled all over Ireland, from Mizen Head to Malin Head, from the mountains to the coast. There are coal mines in Connaught (Sligo and Leitrim), Leinster, and Munster. Copper mines were popular at one point in Ireland and the best examples can be found in Avoca, Co. Wicklow and Allihies in West Cork. Lead and Zinc mines are found in places like Galway and Limerick. I have been very lucky to travel so much with this job. It gave me the opportunity to see many parts of Ireland and fantastic views, some of which I have not seen before.

Do you enjoy your work?

Thankfully I am very fortunate, I love my job. I love geology and our environment so I really enjoy what I do. Being outdoors is very important to me, this job has been great. I must admit winter is hard at times, standing in freezing cold water taking samples in the lashing rain however you always remember those bright, sunny days when being out in the field doesn't feel like you're working at all!



Above: The engine house at the copper mines in Allihies, Co. Cork.

Right: Taking water samples at the coalfields in Geevagh, Co. Sligo.