

## **Extraction of gold using cyanide**

Gold is a very precious metal, and is very valuable. It has been valuable for a long time. Gold has a chemical symbol Au. It is found in what is called ore. Within this gold ore there is not too much actual gold so it needs to be separated out from this ore in an economic but safe way.

Cyanide has been used in New Zealand in gold extraction since the 1889. Cyanide consists of nitrogen and carbon joined together by a triple bond. It is toxic to animal and plant life. Therefore it needs to be prevented from getting into the environment.

1 To collect the gold from the ore it needs to be separated from the other minerals in the ore. However gold is an unreactive metal and is insoluble. **The gold needs to be made into a soluble form so that it can be separated from the other minerals. To make gold soluble cyanide is added in the leaching tanks. This process is done at a high pH.**

Now that it is soluble it is separated from the rest of the ore. It now needs to be recovered. This is done by absorption onto something called activated carbon. Now that the gold has been absorbed it can be further refined and be ready for actual use.

Once the gold has been separated the cyanide left over must be disposed of in some way.

**Processes that dispose of cyanide or recycle it are:**

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1. Volatilisation
  2. Microbial degradation
  3. Absorption onto soil
  4. Photochemical breakdown
  5. Oxidation
  6. Using electricity
  7. The Cyanisorb process in which it is recycled

Some of these processes are natural while others are chemical.

So gold has been extracted and the cyanide left over has been safely dealt with.