



## Dr Laurance John Donnelly

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### CHAIR, IUGS INITIATIVE ON FORENSIC GEOLOGY

FORENSIC GEOLOGY & POLICE SEARCH

MINERAL EXPLORATION & MINING GEOLOGY

ENGINEERING GEOLOGY & GEOHAZARDS

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## What is Forensic Geology?

Forensic geology, also known more broadly as '*forensic geoscience*' or '*geoforensics*' is the *application of geology to policing and law enforcement, which may potentially be applicable to a court of law*'. More simply, forensic geology is the application of geology to aid the investigation of crime. Generally, in a law enforcement context, forensic geologists may support the police in three ways, as follows:

1. Ground searches for burials: These might be designed and implemented to locate homicide graves, mass graves related to genocide, weapons, firearms, improvised devices, explosives, drugs and items of value (e.g. stolen items, money, coinage, jewellery, etc.). Ground searches may be protective or detective in nature and take place in urban, rural or remote locations, on land or in water. Generally, a search may be conducted to; (a) obtain evidence for prosecution, (b) gain intelligence, (c) deprive criminals of their resources and opportunities to commit crime or acts of terror, (d) locate vulnerable persons, (e) protect potential targets and venues, (f) search for homicide graves and associated buried items or objects.
2. Crime scene investigations: Geologists may be required to assist the police or forensic scientists at a crime scene to collect geological samples and provide specialized maps and interpretations of the soil, sediment, rocks, and man-made materials.
3. Geological trace evidence: This involves analysis, interpretation, presentation and explanation of geological evidence, often at a scene of crime or from an item or object, as intelligence and as evidence. Geological trace evidence includes; rock fragments, natural soils and sediments, artificial (anthropogenic) man-made materials derived from geological raw materials (such as bricks, concrete, glass or plaster board) or microfossils. Trace evidence may be transferred onto the body, person or the clothing of a victim or offender or onto vehicles or objects from and to a crime scene. This, when interpreted by an experienced forensic geologist can help with crime reconstruction and may be admissible in a court.

Forensic geology also includes serious crimes (e.g. homicide, rape and other sexual assaults), serious and organised crime (e.g. related to gangs and cartels), counter terrorism, water searches, search for people who have been reported as 'missing' or lost, humanitarian incidents, environmental crimes, wildlife crime, precious minerals and minerals theft minerals substitution, assay sample adulteration, fraudulent and financial crimes, conflict minerals, fakery (e.g. gemstones, minerals, precious metals, valuable or rare fossils, art and artefacts), geotechnical engineering, engineering geology and geohazards.

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*Source: Extract from Donnelly, L. J. 2017. Special Guest Editor. Forensic Geology Themed Issued. Episodes. Journal of the International Union of Geological Sciences, June 2017.*

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