

Potash in Asia

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Evaporite-hosted potash deposits are the largest source of water soluble potassium which is primarily used as a fertiliser. Thick sections of laterally continuous evaporitic salt formations are the host for both stratabound and halokinetic potash-bearing salt deposits. Potash-bearing salt basins may host millions to 100 billions of tonnes of potash.

Potash deposits in Asia occur primarily in two areas : the Cretaceous Khorat Plateau in Thailand & Laos and the Quaternary brine deposits of northern China.

The Khorat Plateau covers an area of ~170, 000km² in northeastern Thailand and central Laos. Bed rock consists of Mesozoic continental red beds. The Phu Phan uplift divides the Khorat plateau into the southern Khorat Basin and the northern Sakon Nakhon Basin. Potash is hosted by the Cretaceous Maha Sarakham (Tha Ngon) Formation. The Maha Sarakham Formation consists of a continental red-bed sequence intercalated with three distinct sequences of marine evaporites and is thought to be greater than 1, 000m thick. The Lower Salt unit of this formation is the host rock of the potash deposits of the Khorat Plateau.

Potash deposits have been discovered in both Thailand & Laos and a number of projects have entered production either as pilot plants or full scale production – mainly in Laos. A number of the projects are proposing significant expansions which would see the Khorat become a top five global potash producer. Potash was originally discovered in Thailand as a result of a follow up of salt springs. The existence of potash in Laos was proven in 1974 when a USAID hole drilled near Vientiane intersected high grade sylvinitic.

In many ways, the Khorat potash deposits suffer from a perception that they are relatively unprospective and this has discouraged further exploration. The presence of carnallite and tachyhydrite as well as basin wide deformation would seem to support this perception. However, the shallow depth of some of the deposits as well as the presence of continuous sylvinitic and areas of low deformation indicates that there is considerable potential for the discovery of significant, low cost deposit.

The Qaidam Basin in northern China is a large 120, 000km² closed basin located on the northern margin of the Qinghai-Tibet Plateau. Shallow saline lakes underlie the centre of the basin. Evaporite deposition occurs in the Qarhan Salt Lake plain – a 6, 000km² salt covered plain with a number of shallow saline lakes and shallow groundwater brines from which potash is extracted.

The Lop Nor basin is a large basin covering 20, 000km² in the eastern Taklamakan Desert. The central-eastern part of the basin is a broad, flat salt plain, with salt crusts covering ~5000km². The sediments beneath the salt plain surface are saturated with concentrated brines and evaporites. Widespread surface and subaqueous evaporites indicate that the salt plain is an active groundwater discharge zone. Subsurface glauberite deposits with potash rich brines are used to

produce potash fertilizer. It is planned that the Lop Nor basin will become one of the world's largest potash-producing regions in the next few years.