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## Bacterial Spray and Decaying Monuments

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A Study has identified bacteria responsible for calcification and hardening of lime.

- In calcification process, lime is deposited.
- When the rain water seeps into the monumental structure, lime leaches through basaltic rock joints. This leached lime is acted upon by bacteria, which turn it into hard calcified lime.
  - Because of it, many monuments have been losing its shine and beauty due to white deposits on its surface.
  - It is very hard and difficult to remove precipitates of calcium carbonates (calcified lime).
- The Salabat Khan tomb, located 125 kilometres from Aurangabad in Maharashtra, has been losing its shine and beauty due to white deposits on its surface.

The study of it was conducted by National Museum Institute of History of Art, Conservation and Museology.
- The study identified bacteria responsible for calcification and hardening of lime are *Bacillus* sp, *Arthrobacter* sp, *Agromyces Indicus* and *Aquamicrobium* sp species.
- **Bacterial Spray:** A spray of identified organisms along with calcium carbonate can create calcite layer that will help preserve exteriors of monuments.
  - In this method, micro-organisms are evenly sprayed on the surface and are fed with nutritional medium containing calcium and urea.
  - The bacteria then induces carbonate precipitation by creating low acidic medium and converting dissolved calcium into a protective surface coating of calcium carbonate.
  - This process is also known as Biocoating. Under it, identified organisms are used to preserve exterior of monuments.
- The study proves that living bacteria can be used to clean as well as protect old and historic monuments and also to seal the cracks, if any, without causing any damage to the monument or its surface.

Currently marble surfaces of historic monuments are cleaned by applying mud packs, which at times can be damaging.

## **National Museum Institute of History of Art, Conservation and Museology**

- The National Museum Institute of the History of Art, Conservation and Museology was formed and registered on January 27, 1989 under the Societies Registration Act, 1860. It is located in Delhi.
- It provides for various courses of study, training and research in different branches of History of art, Museology, Conservation, etc.