

Abstract

The rock arts, petroglyphs, archaeological sites and historic buildings in Iran and many other countries are exposed to environmental and climatic factors (rain, atmospheric pressure, wind, humidity, and temperature) as well as biodeterioration by the growth of some biological communities. The growth of biological communities especially lichens is one of the major effects could damages or destruction of stone surfaces of the stone. Several techniques have been used to control the process of biodeterioration of stone monuments. Each technique has its own advantages and disadvantages, including costs of erosion control and side effects. The correct use of each method requires empirical research by means of direct and indirect observation or experience in the field. Generally very few studies in Iran and few in whole world about removing lichen from the stone surfaces have been done. So there is the necessity of working on this field. Dry ice blasting is a well-known technique for industrial cleaning purposes and recently it has been used for cleaning in conservation of cultural heritage. According to the dry ice blasting advantages, it was used in removing lichen from various surfaces of stones and an iranite sheet and comprehensive studies have been done on them. Generally Dry ice blasting system can remove epilithic lichens on all of case studies, but cannot remove endolithic lichens. The results showed that Dry ice blasting method causes abrasion, spreading spores of lichens, removing loose rock parts and some parts of lichens on stone surface have been remained. In addition, in one of the case studies, endolithic lichens were grown in below of epilithic lichens. After removing epilithic lichen on this case study, rock surface is very porous and cause damage further. It should be carefully consider that choosing any method of removing without studding and experimentation may be damage the stone surface and even it cause to accelerate of lichens growth. As well as it should be evaluated effectiveness of selected method in a long time and site and considering possible consequences of these methods in monuments.

Keywords: Dry ice blasting, Lichen, Historic stone, Pasargadae