

Designing a Sustainable (Green) Stone Floor Maintenance Program by Frederick M. Hueston PhD

Walk into any stone, terrazzo or janitorial chemical supplier and you will find an endless selection of cleaners, sealers, restorers, etc to keep you terrazzo and stone floors looking new. The problem is many of these chemicals can be harmful to the user, occupants and the environment. How does one design a program that is not only sustainable and safe but to also keep your terrazzo and stone flooring in like new condition?

Fortunately there is an effective way to not only maintain these surfaces but also to keep them looking new. The following guideline will show you how to develop a sustainable maintenance program. This is especially important for schools, hospitals and other buildings where children and people sensitive to these harmful chemicals are present everyday.

The dangers of floor strippers, finishes etc have been studied by many organizations including universities, etc. Here is a partial list of those studies

- Green Seal Report

Floor Care Products: Finishes and Strippers

www.greenseal.org/resources/reports/CGR_floorcare.pdf

-Safe and Effective Use of Floor Finish Strippers

Janitorial Products. Pollution Prevention Project

Sponsored by US EPA

www.wrppn.org/janitorial/factsheet/floor.htm

-Health Hazard Evaluation Report 95-0313-2589, University of Michigan Hospitals, Ann Arbor, Michigan

-NIOSH [1990]. NIOSH criteria for a recommended standard: occupational exposure to ethylene glycol monobutyl ether and ethylene glycol monobutyl ether acetate. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 90-118.

-Ruth JH [1986]. Odor thresholds and irritation levels of several chemical substances: a review. Am Ind Hyg Assoc J 47:A142-A151.

WHO [1983]. Indoor air pollutants: exposure and health effects. World Health Organization Regional Office for Europe. WHO-EURO report and studies no. 78, Copenhagen, Denmark.

Program Guidelines

Step 1

A good sustainable maintenance program starts with proper identification of the stone. Is it granite, marble, terrazzo or limestone? If it's marble is it soft or hard? What type of finish does it have? Polished, honed, flamed, etc.? Is the type of stone the proper material for the traffic it is to receive? If not maintenance costs will be higher. If the answers to these questions are unknown, I suggest you contact a reputable stone supplier or restoration company to find out. A complete understanding of your particular stones characteristics is an absolute must for designing a sustainable maintenance program.

Step 2

Once the stone's characteristics are identified determine the quality of the installation. Are the tiles flat and even? Do they contain lippage (uneven tiles)? If so, proper maintenance may prove difficult. The floor should be ground flat, honed and polished using sustainable restoration procedures that utilize non-chemical methods. Are there any cracked tiles? Dirt will have a tendency to accumulate in these cracks. These tiles should be replaced or if replacements are not available at least repaired.

Step 3

What is the present condition of the stone? Has it been coated with waxes, acrylics, urethane or other coatings? If so these coatings need to be ground off to determine the condition of the stone as well as eliminate any toxic and unsafe properties. I have seen stone floors that appear to be in great shape until the coatings are removed to unveil a pitted, scratched mess. If a poor condition is found, complete restoration is necessary before a successful sustainable maintenance program can begin.

Step 4

Once the stone is restored to like new condition, then and only then will a sustainable maintenance program provide good results. This applies not only to the following program but any program. If the stone will be exposed to water, coffee, spills etc, an application of an approved Green impregnator is recommended. These impregnators are designed to penetrate into the stone, without leaving coatings on the surface and still allowing the stone to transpire(breathe). They contain no harmful vapors or off gases when cured.

Step 5 - Daily Maintenance

The three most important tasks that can be done on a daily basis to keep the stone looking new and extending the time before restoration is required are: Dust Mop, Dust Mop and Dust Mop. The most destructive material to most stone is sand, dirt and miscellaneous grit. If these substances could be eliminated, maintenance of the stone would be almost non-existent. A stone floor can never be dust mopped too often. Use a clean, non-treated, dry dust mop at least two to three times a day in high traffic areas and less often in low traffic areas. Walk off mats placed outside and inside an entrance will also eliminate a good portion of sand, dirt and grit. It takes approximately seven steps to remove all loose dirt from the bottom of ones shoes. Walk off mats also need to be removed and cleaned daily. Keep this in mind when purchasing walk off mats. Remember if sand, dirt and grit are

eliminated there will be nothing left behind to scratch and dull the stone.

Note: Coatings in addition to potentially being hazardous contribute to accelerate wearing of the stone or terrazzo surface by acting as a magnet for dirt and debris. It has been shown in studies that a stone or terrazzo floor without any coating will be easier to maintain as well as more cost effective.

Step 6 - Cleaning

All natural stone, both polished and unpolished should be cleaned daily in high traffic areas and less often in lower traffic areas. A clean rayon or cotton string mop should be used with cold to warm water with the addition of a quality Green Approved neutral cleaner or stone soap. Approved Green Neutral cleaners are defined as surfactant type detergents that have a Ph of 7. Acidic and alkaline cleaners should not be used. Be sure to follow the directions very carefully.

Why Does Stone Shine?

All stone is taken from the earth in a raw block form. This block is cut into slices that we call slabs. The slabs are then cut further to a smaller size such as a tile or countertop. It is then polished using a series of abrasive materials. The mechanics are relatively simple. A piece of stone is rubbed with a series of abrasives starting with a course grit size followed by

Finer and finer grit sizes. The scratch pattern left behind from one grit is removed by the next grit creating finer and finer scratches. This process is continued until the scratch pattern becomes microscopic. The process is similar to refinishing a piece of wood, starting with a course sandpaper and ending with a fine sandpaper. The shine is placed on the stone by continuing this abrading process using very fine powders. With sustainable (Green) restoration methods no chemicals are used.

Restoration

Periodically the stone will need to be restored. Perhaps you have not followed a proper maintenance program or the type of stone you have is not suited to the conditions it receives or for what ever other reason it is not responding to maintenance, then restoration is required. How often this will need to be done is difficult to determine. Generally if all the precautions above are followed, restoration may only be needed as often as once per year or as little as once every five years or so. The restoration process re-hones the stone to remove deep scratches and is then re-polished. Do not attempt the re-honing process yourself, this requires a great degree of skill and experience, please call a reputable restoration company who specializes in sustainable methods for this task.

Natural stone was the first building material used by man. Its care and maintenance is one of the oldest tasks performed by our ancestors and was maintained without any of today's modern chemical products. The above guidelines were developed by our years of experience with this beautiful material and with the addition of sustainable practices will provide many years of beauty.