

Why Aggressive Tombstone and Monument Cleaning is Detrimental.

A collection of statements concerning the removal of grave marker material by means of power tools such as the Nyalox wheel on a drill VS safer cleaning products and methods.

Statement from Lynette Strangstad - Abrasive Tools & Practices are Harmful to Gravestones

Lynette Strangstad is the author of the well-known publication:

"A Graveyard Preservation Primer" first published in 1988 and now in its second edition

(Lynette's reply is in response to a question containing photographs of unreadable gravestones.)

"Briefly, in my opinion, "polishing" an old gravestone is not appropriate. The entire stone is altered. Some of the surface is removed. And that fragile surface is the very reason most consider the stone valuable. (Though that is only part of the significance). In grinding the surface (that is, polishing), one is removing part of the lettering. Three or four such abrasive cleanings (over time, say, 15 or 20 years) could easily equal the stone loss that would occur naturally in a hundred or more years. It's good to remember that care for gravestones is not just to satisfy our aesthetic desires in the present; it is to preserve the stone for future generations. The stones I saw in the photos are the type that can frequently be effectively cleaned with water and a soft-bristled brush (natural Tampico bristles are best). D/2 is an effective and responsible cleaning agent, when needed."

"The important thing to remember is that "less is more" and the least aggressive treatment that can clean effectively is the best. Also to be remembered is that no old gravestone should "look like new." It's not; it's historic. And it best is shown when it shows its age. Yes, I understand that reading a stone is important. An effective alternative to cleaning or polishing is to allow for reading of stones through the use of mirrors. Reading a stone with mirrors often creates a dramatically readable stone. Using mirrors, recording results both with a written transcription and a photograph, is often the best approach. The inscription can then be read and recorded, and the stone can be photographed. This is all effectively done without harming the stone."

Statement by Joy Beasley of the National Park Service -- Abrasive Brushes are Not Allowed for Use on Gravestones

August 21, 2015

Statement of Remarks from:

Sharing the reply of Ms. Joy Beasley, Chief of Cultural Resource Preservation Services for the National Capital Region of the National Park Service, when asked about the National Park Service's stand regarding the use of any power tools and/or abrasive brushes on gravestones:

"According to Joy Beasley, Chief of Cultural Resource Preservation Services for the National Capital Region of the National Park Service, the use of power equipment with abrasive brushes is not allowed, since most historic stone materials are likely already very weathered and delicate. The NPS recommends using natural bristle brushes, and brushing very gently (like you would brush your teeth). If there is excessive biological growth or for general soiling, they recommend the use of non-ionic detergents or architectural antimicrobials but they do not allow the use of bleach as it will cause deteriorating salts to form on the stone.

Regardless of the method, any cleaning that is undertaken on delicate headstones can further their deterioration, so the NPS strongly recommends that such projects be carefully planned and considered in order to minimize adverse impacts."

Joy Beasley
Chief, Cultural Resources Preservation Services
National Park Service
National Capital Region
1100 Ohio Drive SW
Washington, DC 20242
202-619-7146 (office)
202-439-7601 (cell)

Statement from Dennis Montagna - Vice President & Conservation Committee Chair, Association for Gravestone Studies

Subject: Nyalox cleaning of tombstones Friday, December 12, 2014

"We neither support nor condone the aggressive cleaning of cemetery monuments, whether through mechanical or chemical means. Moreover, in my nearly thirty years in the preservation field, I can't think of a single case in which the use of power-driven brushes made sense as a stone cleaning tool. In fact, Nyalox brushes are typically impregnated with aluminum oxide abrasives, so they would have an especially devastating effect on calcareous stones like marble, limestone and some sandstones."

Dennis Montagna, Ph.D.
Vice President and Conservation Committee Chair
Association for Gravestone Studies
<https://gravestonestudies.org/>

Statement from Ken Follett - 1st Pres. - Preservation Trades Network - Abrasive Tools & Practices are Harmful to Gravestones

This statement (July 20, 2014) from Mr. Ken Follett via LinkedIn's "Monument & Gravestone Preservation" Group:

I am not a gravestone specialist, but I have been playing with stone, and other masonry materials, professionally for more than forty years. There is a much wider context within the stone industry as to surface treatments, it even includes controversy over the methods of polishing stone floors in modern buildings.

The crux of the issue here as far as materials science goes is that it is true that by polishing of a stone surface it reduces the surface area and in such reduces the exposure to erosive elements.

But this is on a scale that one would need a microscope to be able to notice. The polishing does not reduce the porosity of the stone, or the ability of a stone to take on moisture. Water tends toward an equilibrium of distribution and as such all masonry contains water, and as such irregularities in topography promotes micro-environments that can be suitable to biologic growth. The fact that a stone is polished, and the irregularities of topography reduced may decrease the frequency of micro-environments in the short-term, but it will not in the long-term inhibit continuation of erosion and a return of the rough surfaced topography and a return of biologic growth.

In minuscule respects the removal of an existing stone surface, even one that feels rough to the touch, through polishing can accelerate decay through exposure of underlying material of a softer consistency, particularly in a calciferous stone (such as marble). The difficulty is that this acceleration of degradation is not going to be noticeable in a 1-2 year span, but in the time frame of the gravestone itself that already took maybe 100 years to get to the condition that it is at now. If we wait another 100 years none of us will be around, but likely the surface of the polished gravestone will not be either.

I am a solid advocate of D/2 biologic solution that regardless, the technique of treatment of stone surfaces of a cultural heritage value with polishing with Nyalox brushes on a power drill is totally off the charts on an international basis in the world of stone and monument conservation. Likewise the bad thinking that gravestones need to be "returned to how they looked originally". The very first question needs to be, "Why do this at all? What is the necessity? Where in our culture does this need come from?"

I am reminded that my cousin is a clean freak and she got so obsessive over keeping her fish tank spotless clean that she killed off all of her fish.

But likewise, I see, in reading up on the background of this issue, that the proponent of the technique has something of a rustic white-knight syndrome, in that they intend to save the world from unruly gravestones.

The argument that D/2 roughens the surface of the stone is pure bull pucky. The surface of the stone is rough and if you take away the biologic elements that film over the topography, and that in turn maintain erosive elements to the surface of the stone (either in inhibition of water transmission through evaporation out of the stone, which can lead to freeze-thaw capillary degradation, dependent on the climate, or secretion or containment of atmospheric or biological acids that will dissolve the stone) then of course the surface will feel rough to the hand, or in some cases to the eye. But what you have left is stone, minus the biologic element, and what you do not have is stone dust at the base of the marker, or on your hands.

Ken Follett has been involved with heritage masonry restoration for several decades. He is a founding member and was the first president of the [Preservation Trades Network](#). He currently resides in Brewster, NY, and primarily works with his son-partner, David Follett. They are hands-on consultants for architects, engineers and conservators during the design phases in their investigation of historic structures, wood, and masonry, metal or otherwise.

Abrasive Cleaning of Grave Markers

BY [MARY STRIEGEL](#) ON JULY 24, 2014 · [6 COMMENTS](#) · IN [NEWS](#)



This image shows the inappropriate use of a wire brush on a power drill to alter the surface of a grave marker.

At NCPTT we get a lot of calls and e-mails concerning cemetery care and preservation. A question came in this week from Linda Ellis from Lyndhurst, Ohio. I decided to post her question and our response because lots of people may have the same question.

"I am writing to inquire if you have ever studied the effects of using a [Nyalox nylon brush](#) attached to a power drill type tool on the surface of a gravestone?"

NCPTT has spent the last eleven years working in cemeteries and developing sensitive cleaning methods for grave stones. Researchers and conservators at the Center have approached conservation of cemeteries with the utmost care. Since 2003, we have worked with cemeteries across the country and have applied professional standards such as the [Secretary of Interior's Standards for Historic Preservation](#) and the [American Institute for Conservation's Code of Ethics](#) and [Guidelines for Practice](#). NCPTT has held annual cemetery preservation workshops, has created videos documenting cemetery care, and has published research on cleaning grave markers, (see [Best Practice Recommendations for Cleaning Government Issued Headstones](#).)

Our number one principle for cleaning grave markers is "Do No Harm." This means that we think about the long term as well as short term effects on the material. We have documented damage from power washers and power tools that have been incorrectly used in historic cemeteries. We have conducted research on the effects of surface texture on deposition of pollutants on marble and limestone (See: "Characterization of Carbonate Stone Surface Morphology and its Effect on Surface Uptake of SO₂," 9th International Congress on Deterioration and Conservation of Stone, Venice, Italy, June 19-24, 2000, Elsevier, pp. 303-312.). When stone surfaces are roughened, they can capture and hold more pollutants, moisture, and microbes. This may lead to greater soiling in the future and an accelerated rate of deterioration.

Our research into [pollution deposition on marble and limestone](#) shows that there is chemical attack along the grain boundaries of the stone. This type of weathering leads to dissolution of the "glue" that holds the grains of stone together. As the weathering progresses, the grains loosen and become "sugary." You can wipe your hand across a weathered headstone and see granules on your fingertips.

Biological factors can cause damage to stone as well. [NCPTT funded research at Harvard University](#) shows that fungal spores can penetrate the weathered surface of stone and carry microbes into the stone. These microbes can feed on the calcium and release acidic byproducts as a waste product which weakens the stone. [Biocidal](#) cleaners are recommended to minimize biological damage.

NCPTT does not advocate the use of power tools to clean headstones. The use of such tools can abrade and remove granules from weathered marble and limestone. We do not advocate grinding, re-lettering, or polishing headstones as this alters the original surface of the grave marker. The company that makes Nyalox brushes compares their performance to wire brushes, which are much too harsh for a stone surface. Would you use a Nyalox brush on a power drill to clean the surface of your automobile? If not, then you would not use it to clean a grave marker.

What the aggressively and abrasive Nyalox wheel looks like. You know it's rough on a stone if it claims to "last up to 10 times longer than wire brushes". Wire brushes are generally at the top of most lists for the worst and most harmful tool used to clean or read tombstones.

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120 Grit - Orange - Medium - Cleans Tile, Stone, Cement, Brick Mortar, Soft Metals such as Aluminum, Brass and Copper

240 Grit - Blue - Fine - Preps Plastics, Fiberglass and Rubber, Removes Paints and Finishes from Wood

Some of the devastating effects from using this aggressive tool just a few short years out from its application. Below is a small marble monument that was ground on with a Nyalox wheel. It only took 3 years for this damage to become noticeable. This stone was dirty, but quite legible just before this action took place. Now it is beginning to sugar badly and slowly turning to dust.



There are much safer and less invasive ways to clean tombstones and monuments described below.

Best Practice Recommendations for Cleaning Government-Issued Marble Headstones (2011-17)
BY [MARY STRIEGEL](#) ON JULY 21, 2011 · [54 COMMENTS](#) · IN [CEMETERY CONSERVATION](#), [MATERIALS CONSERVATION](#), [PRODUCT CATALOG](#)



Jason Church demonstrates the proper technique for cleaning a marble headstone using a biocidal cleaner, water, and a soft bristle brush.

In 2004, the Department of Veteran Affairs National turned to NCPTT when it wanted advice on chemical cleaners for their marble headstones. This began a partnership and extensive research on the subject of commercially available cleaners for removing biological growth and general soiling from marble headstones.

This week, NCPTT's Mary Striegel reported the results of the six-year VA-funded study to Steve Muro, the VA under Secretary for Memorial Affairs, and a variety of National Cemetery Administration officials. Based on NCPTT research, the U.S. Department of Veterans Affairs will implement new policies that ban bleach-containing cleaners and encourage the use of gentle biocidal cleaners for regular maintenance of more than three million headstones nationwide. The results of the study led NCPTT to develop a document on the best practice for cleaning government-issued marble headstones, which can be downloaded [here](#).

The main recommendations include the following:

Cleaning should be undertaken with the mildest, least-abrasive method.

A biocidal cleaner performed the best in this study. Recommended biocidal cleaners include D/2 Biological Solution (which was tested in this study) manufactured by Sunshine Makers, Enviro Klean® BioWash®, or other cleaners that contain quaternary ammonium compounds.

Soak the stone liberally with water before applying the cleaner with a hand or backpack sprayer or garden hose.

Always keep the stone wet during cleaning and thoroughly rinse afterwards.

Agitate the surface gently in a circular motion using a soft bristle brush. Clean small areas from the bottom up.

Remember to rinse after cleaning each area and to thoroughly rinse the stone at the end to make sure that no cleaner is left behind.

The research which led to these recommendations included field and laboratory studies that cut across disciplines from chemistry and biology to materials science and conservation treatment development. There were two main goals of the study. The first goal was to find

effective commercial cleaners that removed soiling and microorganisms which alter the appearance and degrade headstones. The second goal was to look at factors that led to the re-growth of microorganisms on the stone.

NCPTT researchers studied five different cleaners which can be easily applied in the field. The cleaners needed to be effective in improving the appearance of the headstone and do no harm to the marble. In the field, NCPTT evaluated cleaners on stones located at five different climates and in both sunny and shady environments. Microbiologists at Harvard's School of Engineering and Applied Sciences evaluated the microorganisms originally on the stone including bacteria, fungi, and algae. They helped to follow the re-growth on the headstones after cleaning over an eighteen-month time period. Additionally, they conducted accelerated laboratory tests using fungi to distinguish between the best field performing cleaners.

A technical report of the research findings is forthcoming.