



# Erasing instrument errors

by Stephen M. Kovach

**From the Author:** As this is my first column, I would like to thank my friend and mentor, Ray Taurasi, and HPN for allowing me to carry the torch of answering your questions. Ray wrote this column for 19 years, and I will do my best to follow in his footsteps to bring you evidence-based answers that are clinically relevant. We know that many of the processes we perform are "sacred cows" that have been passed down to us and therefore, we may not have data or information to back up the practice. I will do my best to answer your questions, never-the-less.

**Q** I saw an employee use an eraser on an instrument. Why would they have one at their workstation?

**A** Your question has taken me back to the start of my career in healthcare in 1975 as a sterilization orderly. When I was inspecting and assembling floor trays between sterilization cycles, if I saw a certain color, spot, or stain on the instrument, I would use an eraser to check it out. But why was I allowed to use an eraser? My manager shared that staff think surgical instruments do not "stain" because the instruments are made from stainless steel, but stainless steel is only corrosion resistant. It can still rust or stain if handled improperly.

We were taught that if we saw a brown-orange discoloration, we could check to see if it was rust by using a standard pencil eraser. We would rub the eraser on the stain/spot and take note of what we saw<sup>1</sup> (see Fig. 1 & 2). If the discoloration was removed and the metal underneath shined with a smooth, clean look, the mark was not corrosion/rust. If a pit mark appeared under the discoloration, the spot/stain was corrosion/rust and needed to be pulled from usage and sent out for repair.

Using an eraser is a time-proven test. In the American V. Mueller Care and Handling of Surgical Instruments, it is stated that a simple and easy way to test for corrosion on an instrument is to take an ordinary rubber eraser and try to erase the spot or stain.<sup>2</sup> In the book "The Basics of Sterile Processing," they remind staff when using a pencil eraser, it is important to wash the instrument afterwards to remove eraser marks and residues.<sup>3</sup>

The practice of using an eraser on stainless steel is not a new idea. Wm. H. Kellogg noted (1907) that a very convenient way of removing rust and brightening surfaces of tools, such as steel, brass, or silver, is to rub the surface with a common ink eraser. It does not scratch the surface as emery cloth does, and it is always available.

But is using an eraser a verifiable process in your workplace today? My answer is yes, based on the information I have just

shared. You need to work with your management team to put in place a practice guideline to check instruments, including stains/spots, addressing the various ways you check instruments when these stains are present. One way may be using an eraser. Other ways might be using products that detect protein, or hemoglobin, or using enhanced visual inspection.

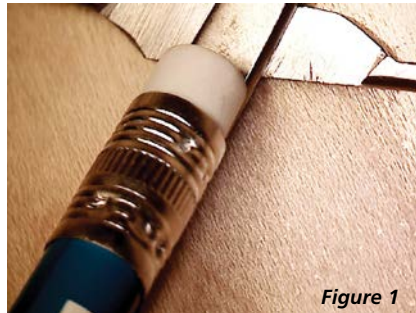


Figure 1

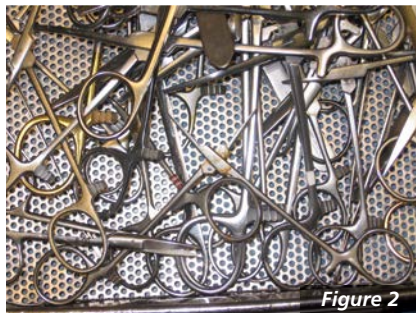


Figure 2

I cannot complete this response without addressing some basic facts about corrosion/rust on instruments. According to AKI Red Book, rust is defined as the product of corrosion on iron, steel, and steel alloys as a result of oxidation, a reaction with oxygen in an atmosphere containing water.<sup>4</sup> Finding the source of rust on your instruments is paramount for every medical device reprocessing department. Surgical instruments are a major asset for every facility, and it is, therefore, important to ensure they last a long time.

My general suggestions are to work with your instrument manufacturer and repair company to review data on how many instruments could not be repaired because of rust/corrosion concerns. Then, use that

data to explore potential causes, starting with the list of issues that can cause corrosion/rusting of your instruments. The list of causes below will get you started in solving this concern.

- Sterilizing instruments of different metals in the same cycle will cause rusting. An electrolytic action carries the carbon particles from the exposed metal and deposits them on the stainless-steel instruments.<sup>5</sup>
- Exposure of instruments for a prolonged time to saline solution or blood can result in pitting and rusting.<sup>6</sup>
- If any moisture remains on instruments, they may rust in storage.<sup>7</sup>
- Insufficient rinsing of operating room linens after the laundry service has used caustic chemicals. When instruments are wrapped or placed on towels, the chemicals may be absorbed by the instruments.<sup>8</sup>
- Reduction of the passivation layer on instruments by etching of instruments, poor water quality, poor steam quality, or improper cleaning chemistries.<sup>9</sup>
- Excess amounts of iron or other minerals from the local water supply may cause the rust deposits.<sup>10</sup>
- The rust film on the surface of stainless-steel instruments can be caused by chemicals in the detergent.<sup>11</sup>
- Ensuring instruments are dry is important - if water is left on the instruments it can form water spots.<sup>12</sup>

In closing, if you are using an eraser and find rust, you need to start a process to find out why and "erase this concern" before it spreads out of control. **HPN**

*Stephen M. Kovach, BS, CFER, started in the medical field in 1975 as a sterilization orderly and has worked in many positions within the Healthcare Industry. He presently is Clinical Educator Emeritus at Healthmark Industries.*

*Some say knowledge is power, but I believe real power comes when we share our knowledge with each other. This column is how we will share our knowledge with each other.*

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