ChemTreat
Case History

Medical Instrument Sterilization

Background

A local hospital system had a very serious problem involving staining and corrosion of reusable medical instruments. The sterilization facility reported certain surgical instruments were stained (corroded) after being processed (cleaned and sterilized) and were rejected by surgeons and compromised surgical procedures. This particularly affected specialized knives. The problem was so severe that surgeries were interrupted, postponed, and even canceled until properly prepared instruments could be made available to the surgeons.

Cleaning and sterilizing surgical instruments is highly regulated by the medical industry to protect patients from infections through contaminated tools and instruments and to ensure health care staff remain safe while handling instruments.

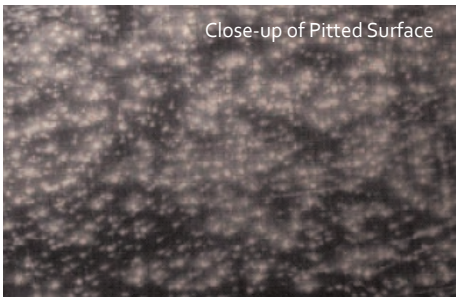
Many regulations apply to the required procedures, including those specified by the Association for the Advancement of Medical Instrumentation, the Occupational Safety and Health Administration, and the Association of Operating Room Nurses. Without specifically reviewing all applicable regulations, the industry demands clean, sterile, serviceable medical instruments at all times. When instrument integrity or sterility is in question, there are serious consequences.

Scope of Problem

Instruments primarily affected were the larger knives as shown in Fig.1. This corroded amputation knife after removal from the automated washing process prior to sterilization. Examination showed rust-colored corrosion stains on the blade surface. The handle showed no evidence of staining or corrosion.

Investigation

Since the knife blade was corroding and not the handle, it was determined the chromium content of the blade was marginal for the corrosion resistant service required. In addition to pitting corrosion, the surface was found to have clusters of mineral deposits. The first three of four automated washing stages used un-softened tap water and the final rinse stage used demineralized water but only rinsed for ten seconds.



Solution

Changes in the wash cycle stages were instituted, purified water was incorporated earlier in the washing procedure, and additional care was specified to ensure proper rinsing. Additional rigorous attention was paid to the pre-wash steps and renewed vigilance regarding water source quality. In addition, a more corrosion-resistant blade alloy was recommended. The facility has been corrosion free and saw overall improvement in the instrument sterilization process.

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