

	<b>Alternatives to Chromic/Sulfuric Acid for Cleaning Laboratory Glassware</b>	Effective:	February 7, 2006
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## 1. Purpose:

The purpose of this Policy is to inform technicians of alternative glassware cleaners. Regulations greatly restrict the disposal of chromic/sulfuric acid cleaning solutions due to their heavy metal content and low pH. Other disposal methods are not feasible because of the small amounts generated by laboratory operations. EH&S encourages the use of substitutes for chromic/sulfuric acid. We recommend that users choose an alternative that:

- Removes desired contaminants from glassware.
- Is safe to handle, i.e., non corrosive and nonirritating to skin and eyes.
- Does not qualify as a hazardous waste after use due to corrosiveness (ph <2, ph >12.5) or heavy metals content.
- Is compatible with the containment device. Many concentrated acids (e.g., 60 percent sulfuric acid) will cause rapid destruction of high-density polyethylene (Nalgene®). Check with the manufacturer for chemical resistance information.

1.1 Presented below are several commercially available substitutes used successfully on campus. Material Safety Data Sheets (MSDSs) are required for each. Request an MSDS from the vendor supplying the material.

## 2. Scope:

2.1. This procedure applies to all technicians who are employed by the Ross University School of Veterinary Medicine.

## 3. Procedure

3.1 When mixing any of the solutions listed below, remember:

- Reactions may give off considerable heat.
- Mix slowly in a fume hood.
- Wear goggles or a face shield.

- Cool solutions completely before capping the container.

#### **Products Available from Primary Source Agreement Vendors**

**Fisher Scientific**, 2761 Walnut Ave., Tustin, CA., 92780, Phone: (800) 766-7000 or (714) 669-4600

[www.fishersci.com](http://www.fishersci.com)

#### **Versa-Clean Multipurpose Concentrate<sup>®</sup>**

Catalog No. 04-342

Applications: Removes grease, clays, dirt, etc., from plastics, glass, rubber, vinyl and many other materials.

#### **Products Available from Secondary Source Agreement Vendors**

**VWR Scientific Products**, P.O. Box 7900, San Francisco, CA, 94120, Phone (800) 841-0617 or (800) 932-5000

[www.vwrsp.com](http://www.vwrsp.com)

#### **RBS-35 Cleaner<sup>®</sup>**

Catalog No. PI 27950

Applications: Surfactant cleaner excellent for the removal of radioactive isotopes; cleans glass, plastic, porcelain, or ferrous metal surfaces of grease, soil, and other contamination. **Additional Product Resources:**

If the above products do not meet your needs, the following products may be ordered from the distributors listed below:

**Aldrich Chemical Co.**, P.O. Box 2060, Milwaukee, Wisconsin 53201, Phone: (800) 558-9160 or (414) 273-3850

[www.sigmaaldrich.com](http://www.sigmaaldrich.com)

#### **Nochromix<sup>®</sup>**

Catalog No. 32869-3

Applications: Prepared in the same way as chromic acid, this crystalline material contains no heavy metals and requires concentrated sulfuric acid.

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**International Products Corp.**, P.O. Box 70, Burlington, NJ 08016-0070, Phone: (609) 386-8770

[www.ipcol.com](http://www.ipcol.com)

#### **Micro 90<sup>®</sup>**

Catalog No. 9031

Applications: Removes trace organics and metals from glassware for fluorimetry analysis, atomic absorption, and high performance liquid chromatography.

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**ESPI**, 1050 Benson Way, Ashland, OR 97520, Phone: (800) 638-2581

[www.espi-metals.com](http://www.espi-metals.com)

**DeContam<sup>®</sup>**

Catalog No. KC85D

Applications: Removes proteinaceous material from glassware used in tissue culture and enzymological analysis. Non-ionic surfactant detergent, pH 10.

**Making Your Own Cleaner**

The following product can be made from common laboratory chemicals.

**Sodium (Potassium) Hydroxide<sup>1</sup> in Alcohol**

- Dissolve 120 g of sodium (or potassium) hydroxide in 120 ml water. Allow to cool.
- Dilute to one liter with 95% ethyl alcohol. This solution acts as a general purpose cleaner.

**References**

1. Gordon and Ford. 1972. The Chemists' Companion: A Handbook of Practical Data, Techniques and References, pp 428-429. John Wiley & Sons.

For additional information, contact your RUSVM Safety & Security Department at Telephone # (869) 465-4161 ext. 191 or [lnolan@rossvet.edu.kn](mailto:lnolan@rossvet.edu.kn).