Biomonitoring California
Scientific Guidance Panel Meeting
Quaternary Ammonium Compounds

Robert Harrison, MD, MPH
California Department of Public Health
Occupational Health Branch
and
University of California, San Francisco
Division of Occupational and Environmental Medicine

TEL 415 717 1601
Email: robert.harrison@ucsf.edu
Clinical classification

Work-related asthma (WRA)

Occupational asthma, caused by work (OA)

Work-exacerbated asthma (WEA)

Sensitizer-induced OA

Irritant-induced OA (Including reactive airways dysfunction syndrome, RADS)

These groupings are not mutually exclusive; e.g. OA can be followed by WEA

Tarlo et al; Chest 134: 1S-41S; 2008
Diagnosis: sensitizer-induced

- Symptoms occur months to years after exposure onset
  Early, late or biphasic responses
    - HMW: early and biphasic
    - LMW: late and biphasic

Tarlo et al; Chest 134: 1S-41S; 2008
Cleaning agent exposure - hospital
RE-JUV-NAL®

One-Step Disinfectant
Germicidal Detergent and Deodorant

Disinfectant Pseudomonadic Staphylocoidal Salmonellaadial Bactericidal Fungicidal Mildewstatic *Virucidal

Active Ingredients:
- Didecyl dimethyl ammonium chloride ................. 2.54%
- n-Alkyl (C₈-H₂₂, C₁₀-H₂₂, C₁₂-H₂₂) dimethyl benzyl ammonium chloride .......... 1.69%
- Total Ingredients: ........................................ 95.77%

Total Contents: ........................................ 100.00%


KEEprus OUT OF REACH OF CHILDREN

DANGER

See side panel for Precautionary Statements and First Aid

NET CONTENTS: 2 QT. OR 1.9 LITERS
STRIKE BAC NON ACID BOWL CLEANER

Disinfectant-Cleaner-Sanitizer-Fungicide-Mildewstat Viricide-Deodorant
for Hospitals, Institutional and Industrial Use

Effective in hard water up to 400 ppm hardness (calculated as CaCO3)
in the presence of 5% serum contamination.

ACTIVE INGREDIENTS:
Dicyl dimethyl ammonium chloride:

INERT INGREDIENTS:

TOTAL INGREDIENTS:

KEEP OUT OF REACH OF CHILDREN

DANGER

SEE BACK PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS

PELIGRO
**SUPER SHINE-ALL®**

*This product meets the Green Seal™ environmental standard for industrial and institutional cleaners based on its reduced human and aquatic toxicity and reduced smog production potential.*

**HMIS Rating:** Health = /1, Flammability = 0, Reactivity = 0

**WARNING**

**CONTAINS:** WATER (CAS #7732-18-5); TALL OIL SOAP, POTASSIUM (CAS #61790-44-1); AMMONIUM PARETH SULFATE (CAS #67762-19-0); TRIETHANOLAMINE (CAS #102-71-6). Do not get in eyes, on skin, or on clothing. Avoid breathing spray mist. Use with adequate ventilation. Wash thoroughly after handling. Do not take internally. Keep container closed when not in use.

**FIRST AID:** In case of contact, immediately flush eyes or skin with plenty of water for 15 minutes, while removing contaminated clothing and shoes. For eyes get medical attention. For skin get medical attention if irritation persists.

See Material Safety Data Sheet for additional information.

**REORDER** #HIL0080822

**DISCLAIMER OF WARRANTY** This product contains chlorine. It is the purchaser’s responsibility to determine the suitability for any intended use. No warranty is made by the manufacturer or seller, expressed or implied, and the manufacturer or seller shall not be liable for any loss, costs, damages, or expenses arising out of the use of this product.

---

**Clasificación HMIS:** Salud = /1, Inflamabilidad = 0, Reactividad = 0

**ADVERTENCIA**

**CAUSA IRRITACIÓN EN LOS OJOS Y LA PIEL** CONTIENE: AGUA (CAS #7732-18-5); JABON DE ACEITE DE PULPA DE MADERA, POTASIO (CAS #61790-44-1); SULFATO PARETH DE AMONIO (CAS #67762-19-0); TRIETANOLAMINA (CAS #102-71-6). Evite el contacto con los ojos, la piel o la ropa. Evite inhalar los vapores del rociado. Aplíquelo bajo condiciones de ventilación adecuadas. Lávese bien después de manejar el producto. No lo ingiera. Mantenga el envase cerrado cuando no esté en uso.

**PRIMEROS AUXILIOS:** En caso de contacto con los ojos o la piel, enjuáguese inmediatamente con agua abundante durante 15 minutos, y quítese las ropas y calzado contaminados. Si ocurre el contacto con los ojos, busque asistencia médica. Si ocurre el contacto con la piel y la irritación persiste, también busque asistencia médica.

Consulte con la hoja de datos de seguridad del material para obtener información adicional.

**MANTENGASE FUERA DEL ALCANCE DE LOS NIÑOS**

---

**RENUENCIA DE GARANTÍA:** El fabricante no hace ninguna garantía, expresada o implícita, con respecto a este producto. El fabricante no será responsable de ningún daño, costo, gasto, daño o pérdidas resultantes de la utilización de este producto.
Preventing WRA

- Primary prevention
  - Substitute with less hazardous substances
  - Change work processes
  - Reduce exposure: engineering controls, PPE as last resort
  - Worker education and training
Preventing WRA

- Secondary prevention
  - Detect early to minimize severity and duration
- Tertiary prevention
  - Provide appropriate health care: workers compensation claims
  - Early removal from exposure
  - Permanent impairment guidelines (ATS 1993)
  - Long-term follow-up
Preventing WRA: workplace surveillance

- Early detection works to prevent morbidity and disability (Tarlo 1999)
- Medical surveillance: symptom questionnaires, spirometry, PEF records, skin-prick testing for HMW antigens (flours, proteolytic enzymes, animal proteins)
- Exposure monitoring of hazards
Chemical policies

- “Green chemistry” initiatives
- “Cradle to grave” or “life cycle” and the workplace
- Occupational and environmental advocacy