

# **Tert-Butyl Acetate: VOC Exemption Update and Use in Cleaners and Degreasers**

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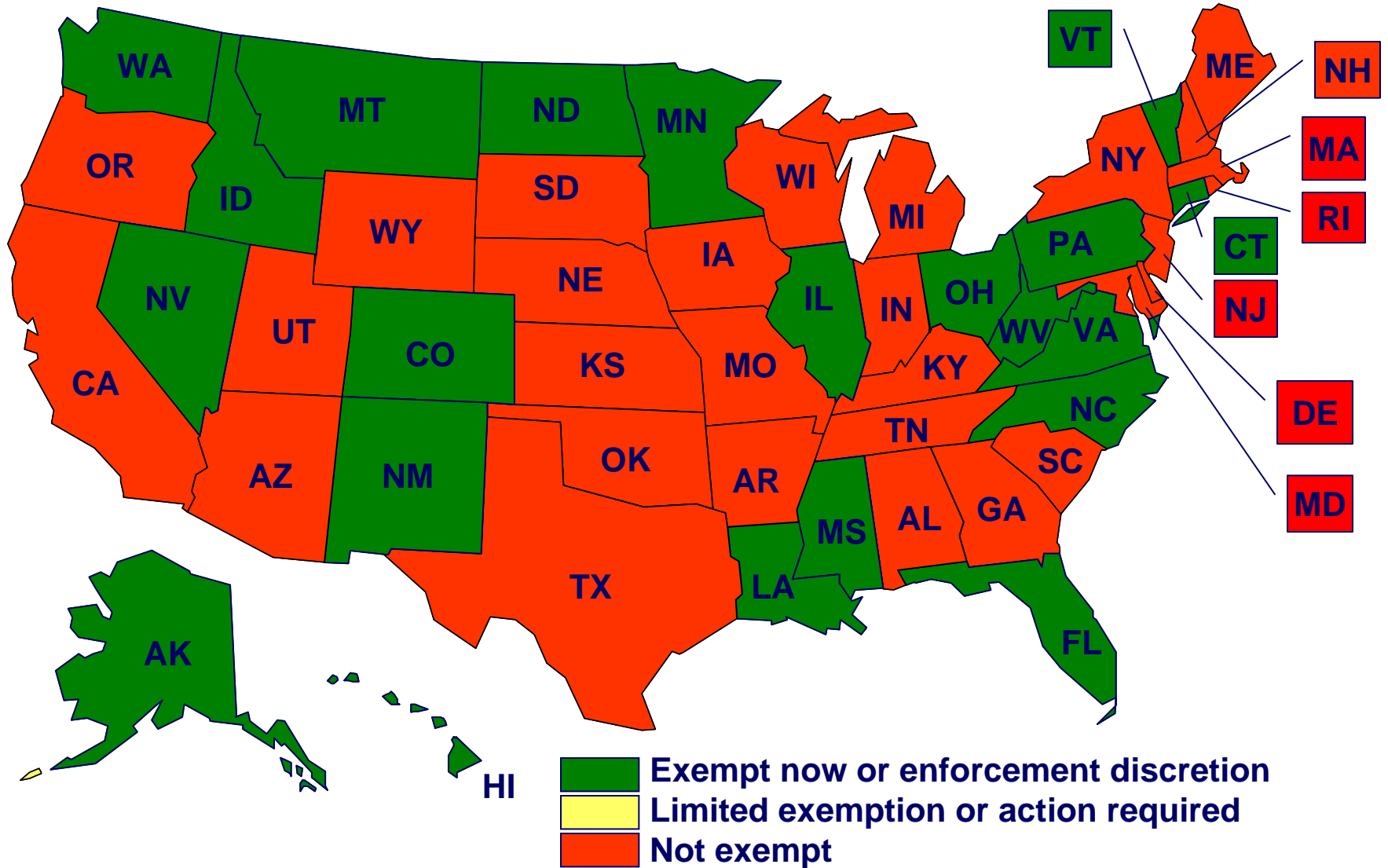
**Monterey, CA**



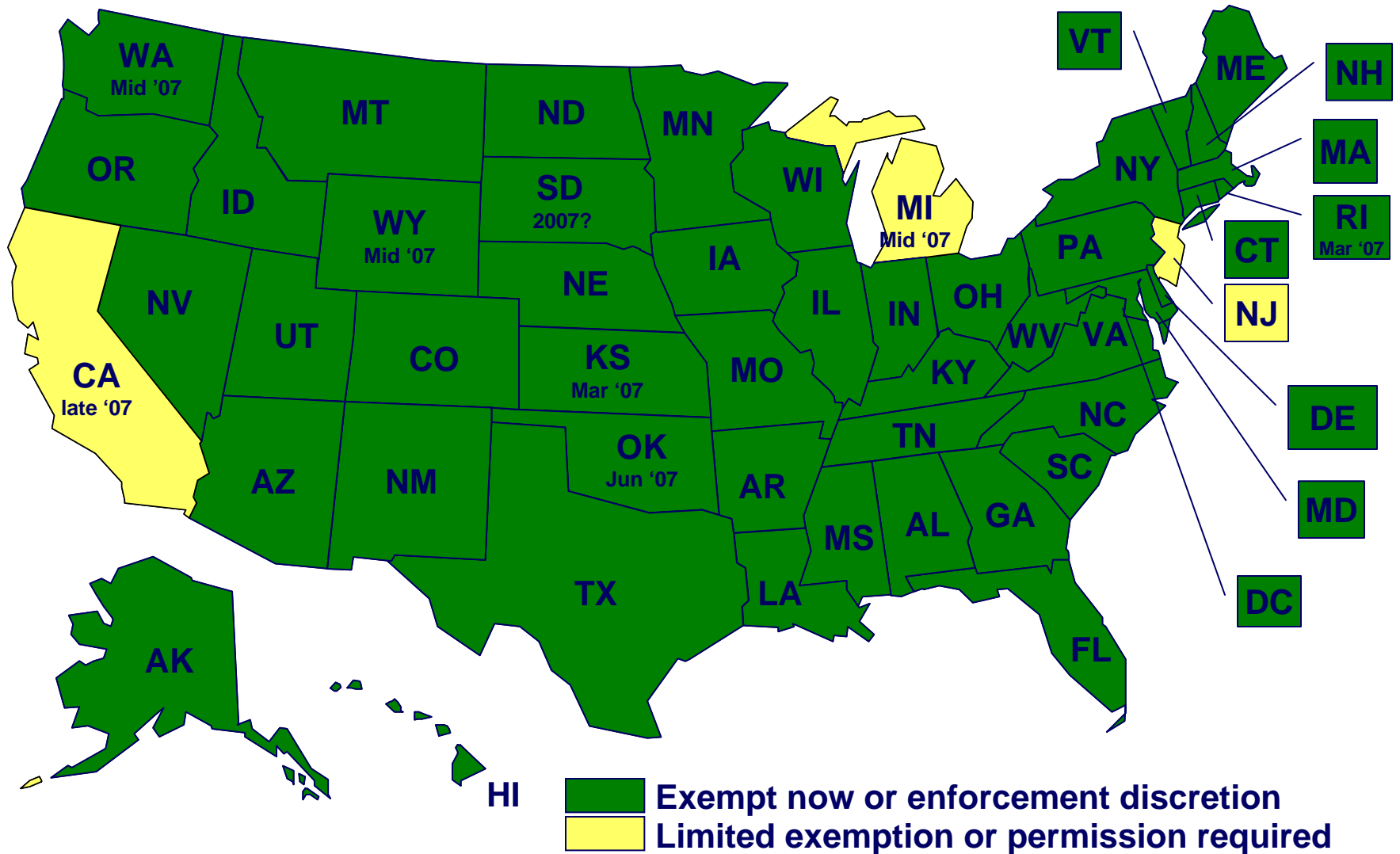
# Outline

- **VOC exemption update**
  - *Current status*
  - *Outlook*
- **TBAc™ solvent cleaning properties**
- **Potential DoD uses**
- **Resources**

# TBAC State VOC Exemption Status – Jan 2005

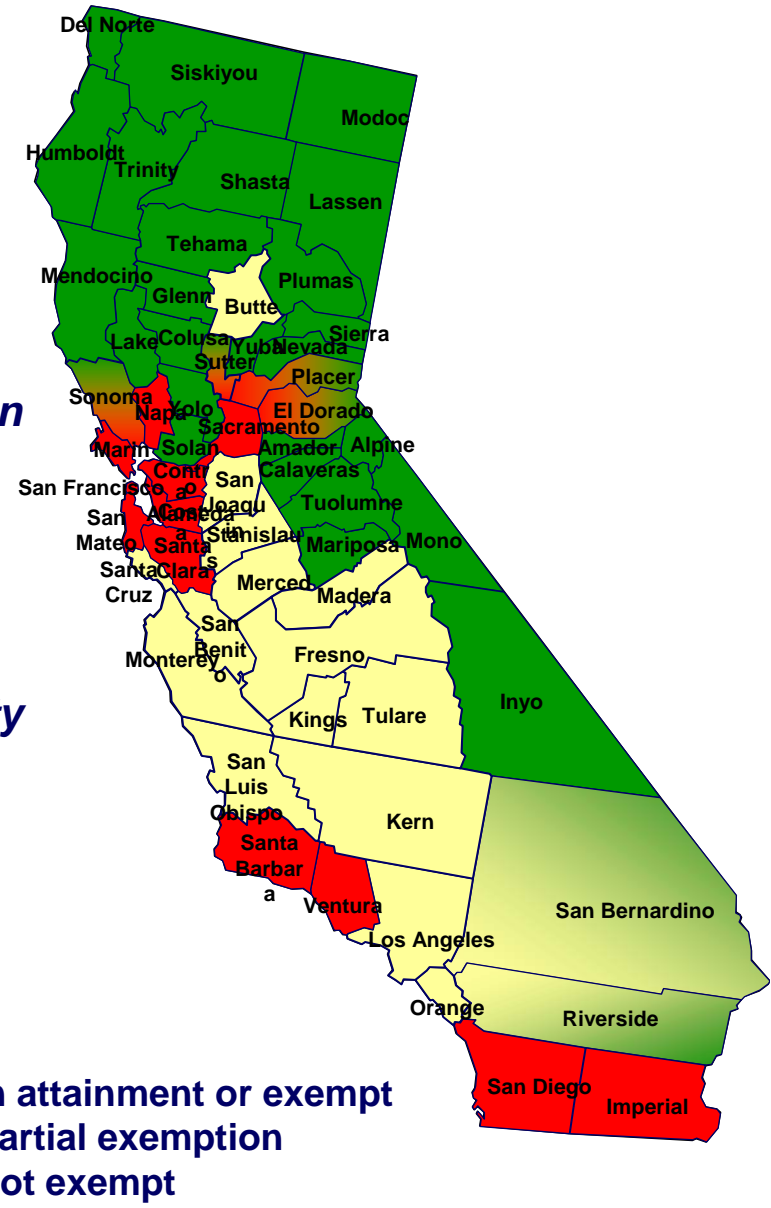


# TBAC State VOC Exemption Status – Jan 2007



# California

- All County and District regulators notified
- TBAC exempt in:
  - *Industrial maintenance coatings (South Coast)*
  - *Automotive refinish coatings (South Coast, San Joaquin Valley)*
  - *Several product categories in other counties*
- CARB and SCAQMD awaiting new toxicity studies
  - *New studies confirm that TBAC has low toxicity*
  - *Not exempt in cleaners, yet....*
  - *CA decision in 2007*
- Other regions following California trend
  - *OTC & LADCO*
  - *Canada*



# TBAC Regulatory & Environmental Profile

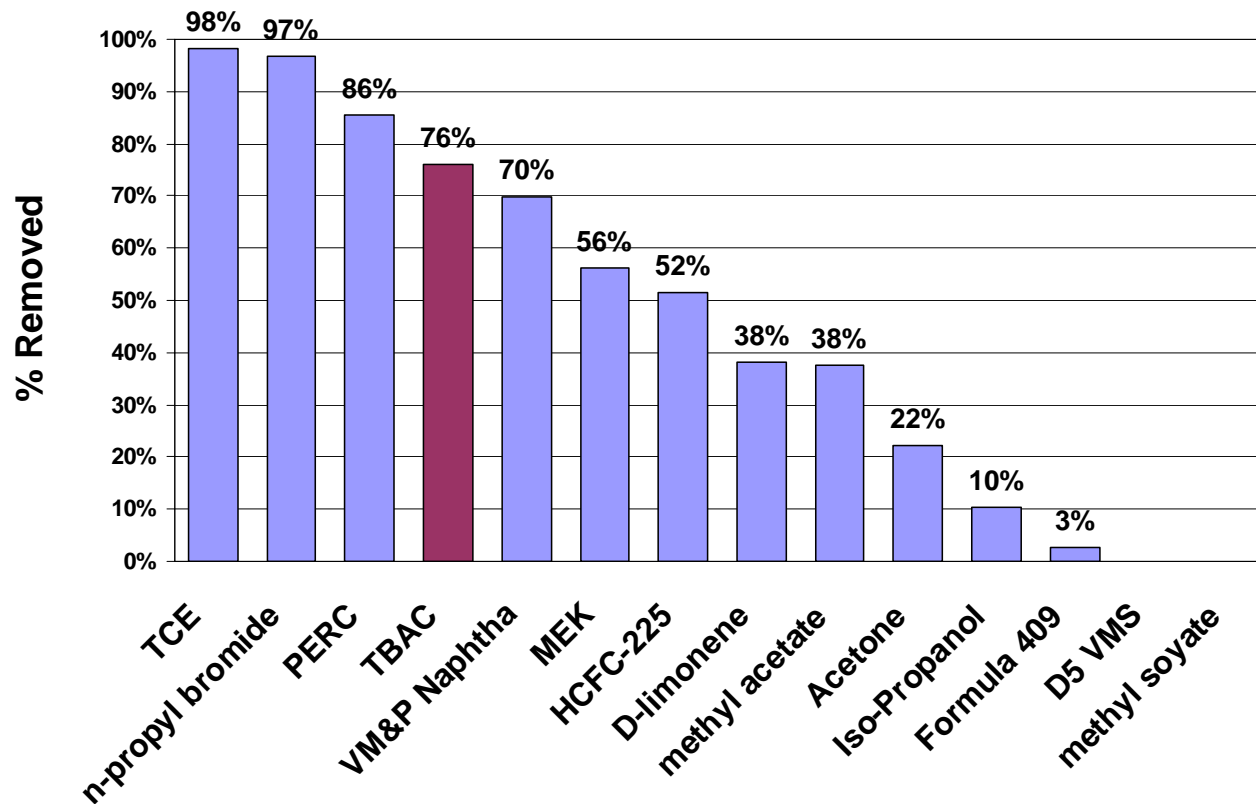
- **VOC-exempt in most of the United States**
- **Non-HAP**
- **SNAP-approved as an alternative to ODC solvents**
- **Not a SARA-313, EPA 17, or AFMC 24 chemical**
- **Not on Prop 65 list**
- **Not a listed or suspected carcinogen or reproductive toxin**
- **Biodegradable**
- **Not an ozone, PM or SOA precursor**
- **Not a global warmer or ozone depleter**
- **Not bioaccumulative or persistent (BCF < 5)**
- **Low aquatic toxicity – limited water solubility (<1%)**

# TBAC – Key Properties for Cleaners

- **Fast evaporation (2.8 x n-BuAc)**
- **High purity (>99.5%)**
- **No detectable residue (<0.001mg/100 ml)**
- **Broad solvency for polar and non-polar compounds (HLB = 114)**
- **Miscible with nPBr, methyl soyate, other cleaning solvents**
- **Low skin irritancy – not a sensitizer – use nitrile or butyl gloves**
- **Non-corrosive to aircraft metals – no hydrogen embrittlement**
- **Avoid contact with aircraft plastics (polycarbonate and acrylic)**
- **Flammable (40°F)**
- **Strong ester odor (blueberry, camphor, banana)**
- **Metabolizes to an alcohol – minimize inhalation**

# Degreasing Performance Test

Average Cleaning Efficiency of Solvents and Formulated Cleaners on Five Industrial Greases and Rosin Flux



- Greases tested
  - *Silicone*
  - *Axle*
  - *Lithium*
  - *Vaseline®*
  - *Cosmoline®* ET8
- Rosin flux
- RT immersion test

Vaseline® is a registered trademark of Unilever Corp.  
 Cosmoline® is a registered trademark of Houghton International.

Process Cleaning Magazine, June 2006

**Slide 8**

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**ET8**

Deleted the space between Cosmoline and the (R) trademark.

Erica Tucci, 1/22/2007

## Potential DoD Applications for TBAC

- Hand wipe cleaning
- Cold cleaning
- Precision cleaning
- Vapor degreasing (with non-flammable azeotropes or specialized equipment)
- Paint, ink, adhesive, sealant cleanup & thinning
- Paint stripping

# TBAc™ Solvent Resources

- [www.tbac.com](http://www.tbac.com)
- General questions & samples:
  - 610-359-2054
  - [TBAc@lyondell.com](mailto:TBAc@lyondell.com)
- Commercial questions:
  - Gail Kelly: 610-359-6443; [gail.kelly@lyondell.com](mailto:gail.kelly@lyondell.com)
- Technical or Regulatory questions:
  - Dan Pourreau: 610-359-6837; [dan.pourreau@lyondell.com](mailto:dan.pourreau@lyondell.com)



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