

Appendix 1: Sources for Alternatives Identified

The table below outlines the sources used to identify alternatives assessed for hazard traits in this report and the specific lists of alternatives outlined in those publications.

While this demonstration project focused on assessing the hazards of 11 potential alternatives to methylene chloride in paint stripping consumer products, there are roughly a dozen additional alternatives that could have been included as well. Resource limitations constrained the selection of alternatives for consideration in this demonstration project to those chemicals where GreenScreen® evaluations already existed from ToxServices or the Interstate Chemicals Clearinghouse (IC2) website—this project did not have the resources necessary to conduct new GreenScreen® assessments.

Actual applicants developing their Stage 1 report to comply with the California SCP regulations will need to explicitly describe where information about potential alternatives was obtained and reasons for including/excluding these alternatives in the assessment. In practice, lists of potential alternatives can be quickly screened for exclusion/inclusion based on high-level hazards (e.g., cancer or developmental/reproductive toxicity) using authoritative lists (for example, using the GreenScreen® List Translator <http://www.greenscreenchemicals.org/method/greenscreen-list-translator>). Those alternatives not excluded can be further assessed using the suite of hazard endpoints in GreenScreen®.

TABLE 8
Sources & Lists of Chemical Alternatives to Methylene Chloride-Based Paint Strippers

Source	Primary Chemical Alternatives* Outlined <i>(Italicized = not included in this demonstration project)</i>
<p>1. Policy Analysts Limited. Impact Assessment of Potential Restrictions on the Marketing and of Dichloromethane in Paint Strippers. Prepared for the European Commission Directorate-General Enterprise and Industry. 2007.</p>	<p>The report primarily reviews the following alternatives</p> <ul style="list-style-type: none"> • Benzyl alcohol (CAS # 100-51-6) • Dibasic esters (CAS #'s 106-65-0, 1119-40-0, 627-93-0, and 95481-62-2) • Dimethyl sulfoxide (CAS # 67-68-5) • 1,3-Dioxolane (CAS # 646-06-0) • Caustic soda (CAS # 1310-73-2) • N-methyl-2-pyrrolidone (CAS # 872-50-4) <p>Other alternatives noted for consumer/professional paint stripping applications (Table 5.12 of report) include:</p> <ul style="list-style-type: none"> • Formic Acid (CAS # 64-18-6) • Acetone (CAS # 67-64-1) • Methanol (CAS # 67-56-1) • D-Limonene (CAS # 5989-27-5) • <i>Xylene (CAS # 1330-20-7)</i> • <i>Phosphoric Acid (CAS # 7664-38-2)</i> • <i>2-methoxymethylethoxypropanol (CAS # 7664-38-2)</i> • <i>Dipropylene glycol monoethyl ether (CAS # 15764-24-6)</i> • 2-(2-butoxyethoxy) ethanol (CAS # 112-34-5) • <i>methyl ethyl ketone (CAS # 78-93-3)</i>
<p>2. Morris M and Wolf K. Methylene Chloride Consumer Product Paint Strippers: Low-VOC, Low Toxicity Alternatives. May 2006.</p>	<ul style="list-style-type: none"> • Benzyl alcohol (CAS # 100-51-6) • N-methyl-2-pyrrolidone (CAS # 872-50-4)
<p>3. US CPSC. What You Should Know about Using Paint Strippers. 2007.</p>	<ul style="list-style-type: none"> • Benzyl alcohol (CAS # 100-51-6) • Dibasic esters (CAS #'s 106-65-0, 1119-40-0, 627-93-0, and 95481-62-2) • Acetone (CAS # 67-64-1) • Methanol (CAS # 67-56-1) • Toluene (CAS # 108-88-3) • Caustic soda (CAS # 1310-73-2) • N-methyl-2-pyrrolidone (CAS # 872-50-4)

TABLE 8

Sources & Lists of Chemical Alternatives to Methylene Chloride-Based Paint Strippers (continued)

Source	Primary Chemical Alternatives* Outlined <i>(Italicized = not included in this demonstration project)</i>
4. Massachusetts Toxics Use Reduction Institute. Massachusetts Chemical Fact Sheet: Methylene Chloride. November 2014.	<ul style="list-style-type: none"> • Benzyl alcohol (CAS # 100-51-6) • Dibasic esters (CAS #'s 106-65-0, 1119-40-0, 627-93-0, and 95481-62-2) • Acetone (CAS # 67-64-1) • Methanol (CAS # 67-56-1) • Toluene (CAS # 108-88-3) • Caustic soda (CAS # 1310-73-2) • N-methyl-2-pyrrolidone (CAS # 872-50-4)
5. Washington State Dept. of Labor & Industries, SHARP. Successful Bathtub Stripping with Benzyl Alcohol as an Alternative to Methylene Chloride. 2012.	<p>Formulation 1:</p> <ul style="list-style-type: none"> • Benzyl alcohol (CAS # 100-51-6) • Formic acid (CAS # 64-18-6) <p>Formulation 2:</p> <ul style="list-style-type: none"> • Dibasic ester (Dimethyl glutarate, CAS# 1119-40-0) • N-methyl-2-pyrrolidone (CAS# 872-50-4) • <i>Propylene carbonate</i> (CAS # 108-32-7) • <i>Potassium hydroxide</i> (CAS # 1310-58-3)
6. Tukker A and Simmons L. Methylene Chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. TNO-Report prepared for the European Commission Directorate General of Enterprise and Industry. 1999.	<ul style="list-style-type: none"> • Benzyl alcohol (CAS # 100-51-6) • Dibasic esters (CAS #'s 106-65-0, 1119-40-0, 627-93-0, and 95481-62-2) • Acetone (CAS # 67-64-1) • Methanol (CAS # 67-56-1) • Toluene (CAS # 108-88-3) • Dimethyl sulfoxide (CAS # 67-68-5) • N-methyl-2-pyrrolidone (CAS # 872-50-4)
7. Organization for Economic Cooperation and Development. Risk Reduction Monograph No. 2: Methylene Chloride Background and National Experience with Reducing Risk. 1993.	<ul style="list-style-type: none"> • Caustic soda • N-methyl-2-pyrrolidone (CAS # 872-50-4) • Dibasic esters (CAS #'s 106-65-0, 1119-40-0, 627-93-0, and 95481-62-2) • Toluene CAS # 108-88-3) • Acetone (CAS # 67-64-1) • <i>Xylene</i> (CA S# 1330-20-7) • <i>Ketone mixtures</i> • <i>Furfuryl alcohol</i> (CAS # 98-00-0)
8. Kelley J and Considine T. Performance Evaluation of Hap-Free Paint Strippers vs. Methylene-Chloride-Based Strippers for Removing Army Chemical Agent Resistant Coatings (CARC). Army Research Laboratory. ARL-TR-3823. June 2006.	<ul style="list-style-type: none"> • Benzyl alcohol (CAS # 100-51-6) • N-methyl-2-pyrrolidone (CAS # 872-50-4)
9. Luey KT, Coleman DJ, Ternet GK. Replacement of methylene chloride in NVR and paint removal applications. AeroSpace Corp (El Segundo, CA). December 30, 2000.	<ul style="list-style-type: none"> • Toluene CAS # 108-88-3) • Acetone (CAS # 67-64-1) • N-methyl-2-pyrrolidone (CAS # 872-50-4) • <i>Methyl ethyl ketone</i> (CAS # 78-93-3) • <i>Tetrahydrofuran</i> (CAS # 109-99-9) • <i>2-pyrrolidone</i> (CAS 616-45-5) <p>[Note these alternatives identified based on Hansen Solubility parameters]</p>