Because of its ozone depletion potential, HCFC-141b, a hydrochlorofluorocarbon, has long been on regulators’ lists of targeted substances, and its use is severely restricted in most developed countries around the world. Commonly used in the medical device manufacturing industry for the deposition of silicone, heparin, PTFE and other coatings, it has been known since the 1987 Montreal Protocol that HCFC-141b would not be a sustainable solution for these applications.

On January 1, 2002, a complete use ban covering all solvent uses of HCFC-141b goes into effect in the European Union. In the U.S., a manufacturing ban goes into effect on January 1, 2003. Although use of existing supplies of HCFC-141b for silicone deposition and other medical applications will still be allowed within the U.S., there is a strong possibility that the U.S. EPA will consider restricting HCFC-141b in this application, once suitable alternatives can be qualified. No one can say when the restrictions might happen for certain, but for companies doing business worldwide, this is the time to start planning your transition to a solvent with a favorable blend of performance, environmental and worker safety properties.

3M has written a new chapter.

3M™ Novec™ Engineered Fluids are hydrofluoroether (HFE) based materials that are increasingly being used to replace HCFC-141b as a solvent in medical deposition, cleaning, and tube swelling applications.

Compliant with all current regulations, Novec fluids have zero ozone depletion potential, low global warming potential and the hydrofluoroether component of these products is exempt from the definition of a volatile organic compound (VOC).

So instead of an interim solution that may require another reformulation when the next round of environmental or worker health regulations take effect, Novec engineered fluids leave you positioned for the future. They’re the long-term, hard-working solutions; they’re the smart choice.
With 3M™ Novec™ Engineered Fluids, you don’t have to sacrifice performance to be environmentally responsible. Their ability to disperse a wide variety of coatings and successfully deposit them on various surfaces has been proven. Their low surface tension provides for extremely uniform wetting and coating. Further, their low boiling points and low heat of vaporization give rise to a rapid evaporation rate—potentially speeding the drying process.

A worldwide solution

The advantages of standardized manufacturing operations to a medical device manufacturer are clear, including uniform manufacturing procedures and the opportunity for consolidated, global sourcing. The European use phaseout of HCFC-141b is a tremendous opportunity to modernize and standardize your lubricant deposition operations and other medical solvent applications worldwide...once and for all.

That’s because Novec fluids—hydrofluoroethers (HFEs)—are not scheduled for phase out in any country. By addressing the problem now, you can avoid having to find replacement solvents in the future.

And because 3M is a global corporation and a leading supplier of fluorochemicals worldwide, you can count on the same innovative 3M technology and products, customer service, technical support, regulatory guidance, and attention to your needs at every one of your facilities, on every continent.
According to the Montreal Protocol, all industrialized nations are to phase out the consumption of hydrochlorofluorocarbons (HCFCs) by 2030. The U.S. EPA and the European Union have targeted certain applications to meet the near term reduction requirements. The table below summarizes the current and future regulations for the use of HCFC-141b in medical device deposition applications.

<table>
<thead>
<tr>
<th>HCFC-141b</th>
<th>3M™ Novec™ Engineered Fluids</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Regulation</strong></td>
<td><strong>Europe</strong></td>
</tr>
<tr>
<td>Solvent uses prohibited after January 1, 2002</td>
<td>None</td>
</tr>
<tr>
<td>EPA is currently reviewing end-use applications, including medical uses.</td>
<td>None expected</td>
</tr>
</tbody>
</table>

In addition to these use regulations, a production phaseout of HCFC-141b will begin on January 1, 2002, in the European Union and will begin on January 1, 2003, in the United States.

Because HCFC-141b is an inexpensive substance, many users have not had to be concerned about emissive losses or conservation measures. Today, however, responsible use practices call for minimizing the amount of any chemical product that is allowed to escape into the environment—both for reasons of environmental stewardship and for cost efficiencies. One transnational corporation that recently converted all its lubricant deposition operations to 3M™ Novec™ Engineered Fluid HFE-71DA worked with 3M to cut down on drag-out and emissive losses. The result was a reduction in overall fluid loss by 75%—significantly reducing their overall cost. 3M can work with you to help reduce your fluid loss as well.

Some solvent choices can also entail hidden, additional risks or costs. Flammable organic solvents introduce fire or explosion risks to workers and facilities. And the additional engineering, equipment, and insurance costs can often more than offset the seemingly low cost of the solvent itself.

For more information on equipment conversion and optimization, please contact your local 3M representative, or call 3M Performance Materials Division, 800.810.8513.
Conversion assistance and equipment optimization

Novec fluids may perform differently than HCFC-141b in certain key areas. We’ll give you clear, concise suggestions for converting and optimizing your existing equipment or process for use with the appropriate Novec fluid.

Used Fluid Return Program

In the U.S., Puerto Rico, and Europe, 3M offers a free Used Fluid Return Program to those companies with a qualifying amount of used fluid.

Committed to the future

While it’s difficult to forecast the exact nature of regulation, it’s a good bet that it will continue to evolve in favor of environmental stewardship. With 3M’s Product Stewardship Program, Novec fluids are well positioned to meet regulations today and into the future.

What’s more, 3M is committed to improving our technologies, with continuous new product research and development.

Contact us

If you have any questions about Novec fluids for use in medical device manufacturing applications, please contact your local 3M representative, or call 3M Performance Materials Division, 800.810.8513.

For information on additional 3M fluids, coatings, and other chemical products for the medical industry, visit our web site at: www.3m.com/fluids

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