



# Freon Removal



## What kinds of appliances/equipment contain Freon?

Several different types of refrigeration equipment contain Freon such as refrigerators, air conditioners, dehumidifiers, freezers, and water coolers.

## What is Freon and why is it bad for the environment?

"Freon" is actually a trade name that describes a whole class of chemicals used in refrigeration. These chemicals are called **chlorofluorocarbons**, or **CFC's** and are compounds comprised of carbon, fluorine, chlorine, and hydrogen. When CFCs were first developed in the 1930s by the company DuPont, they were thought to be "wonder chemicals" because they were useful and non-toxic to humans. Decades later however, it was discovered that CFC's harm the environment. Here's how:



Being lighter than air, CFCs rise through the atmosphere until they hit the ozone layer. The ozone layer is a "blanket" in the stratosphere that protects us from harmful ultraviolet (UV) radiation. Through a chemical process, **the CFC's destroy the ozone molecules at a faster rate than Nature can replenish the ozone layer.**



CFCs are listed as Class I (most harmful) stratospheric-ozone destroyers in the United States Clean Air Act. Class I chemicals are the worst known stratospheric-ozone destroyers.

## Recycling/disposing of Freon-containing appliances

Because of the harmful effects to the ozone, **it is illegal to release Freon gas into the atmosphere.** Do you have Freon-containing appliances at the end of their useful life in your community? You will need to have a certified technician remove the Freon from appliances in your community before the appliances can be recycled/disposed of (which includes crushing and disposing of the appliances in your community, or backhauling them out). If the appliances are being backhauled to a recycling/disposal company, the "certification of removal" (a piece of paper) must be sent to the company along with the appliances to prove that the Freon was removed properly.

You *may* be able to backhaul the appliances, with the Freon intact, out of your community. You would need to send them to someone that can remove the Freon for a fee and then recycle/dispose of the appliances. This will depend on the transportation company's shipping policy, the set-up of the recycler/disposer, and the overall cost (it may or may not be a more expensive option). Call the companies listed in the next sections for information and price quotes.

## Options for removing Freon and range of sample costs

There are three basic options for getting Freon removed from appliances/equipment in your community:

**Option 1:** Hire a certified Freon removal technician to come to your community and remove Freon from your appliances.

**Option 2:** Hire a certified Freon removal technician to come to your community to remove Freon from your appliances AND get trained and certified by them on-site, so you can remove Freon in the future.

**Option 3:** Get trained and certified in Freon removal in Anchorage and purchase your own equipment so you can remove Freon.

Here is the range of sample costs for each option:

**Option 1:** Hiring a certified technician to come to your community and remove Freon

<i>Item</i>	<i>Cost example</i>	<i>Assumptions for cost example</i>
Technician's time: \$500 flat fee to \$127/hr (10-12hr/day minimum) If the units are all lined up and the temperature isn't too cold (colder takes longer), it takes approximately 20 minutes/unit to remove Freon.	\$500 to ~\$1,200	Amount depends on company used.
Participant fee: \$80-\$150/student	\$80-\$150	Amount depends on company used.
Flight, room and board for technician	\$1,000	Amount depends on your location
Excess baggage fee (for equipment)	\$100	Amount depends on airline
Refrigerant disposal: \$35-\$300 per cylinder (if the material is separated correctly the cost will be on the lower end)	\$35-\$300	Assuming 20 refrigerators. Range depends on company used.
Shipping full tanks to Anchorage (tanks can hold up to 30 lbs of Freon and empty tanks weigh 15 lbs)	\$100	Amount depends on your location
<b>TOTAL</b>	<b>\$1,800 to \$2,900</b>	

**Option 2:** Hire a certified Freon removal technician to come to your community to remove Freon from your appliances AND get trained and certified by them on-site, so you can remove Freon in the future. The costs of this option depend on the company used. The costs could be a) the same as option 1, or b) the costs of option 1 plus an additional 12-24 hrs (depending on student's experience) of the technician's time (at \$95-127/hr) for training. For most companies, there would also be at least a \$80 fee for the certification exam which can be administered on-site or taken on-line.

**Option 3:** Getting certified in Freon removal in Anchorage and purchasing your own equipment. Please note that you can only purchase Freon removal equipment if someone in your community is certified in Freon removal. Companies will ask to see a copy of the certification before they sell you the equipment.

<i>Item</i>	<i>Cost example</i>	<i>Assumptions for cost example</i>
<b>Instructors time:</b> The hourly/daily rates vary and the training can take 8-24 hours, depending on the experience of the students. For example, for someone that has read the training materials before the training starts, one day of information and hands-on experience may be all that is needed. But for someone that has no prior knowledge or experience of Freon removal, 2-3 days of training may be necessary.	\$500- \$1,440	Assuming an average training time of 2 days, 8hr/day
<b>Participant cost:</b> The cost is \$80-\$150/student.	\$80- \$150	
<b>Travel costs for training in Anchorage</b>	\$1400	Amount depends on whatever your flight, lodging, and per diem costs are for Anchorage
<b>Refrigerant Handling Equipment:</b> Recovery unit (\$800-1,200 each depending on quality) Recover tanks (typically need about 4 - use one for oil) (\$80 each) Gauges with hoses (\$80 each) Line piercing tool (typically need 2) (\$75 each) Scale to weigh (\$300 for a digital one) - you don't need this if you have a scale on hand but you need to make sure you only fill the tank 80% per DOT requirements	\$1,650 to \$2,500	This is an estimate for the basic equipment needed. There are other tools that may be helpful to you (such as a tool which tests Freon type) which aren't listed here. Call the companies to discuss all equipment options.
<b>Shipping of Equipment from Anchorage</b>	\$750	Amount depends on your location
<b>Refrigerant disposal:</b> \$35-\$300 per cylinder (if the material is separated correctly the cost will be on the lower end)	\$35- \$300	Assuming 20 refrigerators
<b>Shipping full tanks to Anchorage</b> (tanks can hold up to 30 lbs of Freon and empty tanks weigh 15 lbs)	\$100	Amount depends on your location
<b>Shipping empty tanks back to community</b> (empty tanks weight approx 15 lbs each)	\$50	Amount depends on your location
<b>TOTAL</b>	<b>\$4,500 to \$6,700</b>	

## Who performs Freon removal and training

We made some calls to find out who you can call for certified Freon removal and training. If you have worked with other companies that offer these services that you would recommend, please post a message to the SWAN Village Message Board to share your information with other Villages.

<http://members.boardhost.com/SWAN/>

Note: we advise you to **call as many of the companies listed below as you can** to discuss your specific situation. The costs listed below are only estimates. Talk to the different companies to find out who works best for what you need to do.

### **COMPANY NAME: TOTAL RECLAIM**

**Contact:** Larry Zirkle Phone: (907) 561-0544 Email: [larryz@totalreclaim.com](mailto:larryz@totalreclaim.com)

12101 Industry Way, Unit #C4 Anchorage, AK 99515

**Costs:** Total Reclaim provides Freon removal training at their location in Anchorage. The training will be offered 4 times in 2014 (most during the summer months). Please call for a quote. Total Reclaim also sells Freon Removal equipment and also accepts refrigerant for disposal (call for quotes for both). They also offer other services such as backhauling Freon-containing appliances, electronic waste and hazardous waste. Call for more information. Also go to <http://www.totalreclaim.com/alaska.html> for more information about their company and statement of qualifications.

Note that Total Reclaim also provides on-site training for larger groups in hubs such as Bethel, Dillingham, Nome, etc. The costs for these trainings are \$500 plus travel and could be a bit lower. Call for a quote.

#### **COMPANY NAME: AURORA REFRIGERATION**

**Contact:** Ed Christensen Tel: 907-563-7337 Fax: 800-882-3740 Mobile: 907-351-3250

Email: [edc@arialaska.com](mailto:edc@arialaska.com)

PO Box 111370 Anchorage, Alaska 99511

**Costs:** Technician costs to remove Freon on-site are \$127/hr with 12hr/day minimum. Costs for refrigerant disposal are \$105 per 50 lb DOT tank. Hazmat fee and disposal fee are not included. When they pick up a tank of gas that needs to be reclaimed, you will receive a new one so you always have a good recovery tank. The recovery equipment would be an added expense but is necessary for the proper removal of refrigerant. To train on-site would cost an additional 12-24 hrs (depending on student's experience) at \$127/hr. There would also be an \$80 fee for the certification exam which can be administered on-site or taken on-line. Travel, lodging, and meals would be an added expense. Getting trained in Anchorage costs \$100/hr for the instructor's time and the training can take 8-24 hours, depending on the experience of the students. Call for more information and quotes for your specific situation.

#### **COMPANY NAME: Rural Alaska Village Network**

**Contact:** Lance Whitwell 907-849-8544, [lancewhitwell@yahoo.com](mailto:lancewhitwell@yahoo.com) (prefers email)

**Costs:** Rural Alaska Village Network offers on-site Freon removal training. The costs are \$300 a day, plus travel, lodging, and per diem. Training usually takes 2 days—1<sup>st</sup> day is in a classroom setting and 2<sup>nd</sup> day is hands-on training, and can stay longer if required. Certification costs are \$150 per student. They do not require a minimum number of students to hold a training. They can also carry out Freon removal, backhaul training, and HAZWOPER. Contact Lance for details and costs.

#### **COMPANY NAME: ERIC MIDDLEBROOK CONSULTING**

**Contact:** Eric Middlebrook Bethel 907 543 4075

Call the number above for Freon removal quotes based on your specific situation.

### **Sharing Freon removal resources**

Some organizations loan out their Freon removal equipment for other communities to use. There is an effort underway across the state to share resources and information to promote more effective coordination and use of Freon expertise and equipment. Many villages have Freon recycling needs, but do not have access to Freon recycling machines or certified removers. While other villages have Freon recycling machines, but could be using them more efficiently or job sharing them with other communities. Ted Jacobson at RurAL CAP is helping to coordinate an effort to share resources and information regarding Freon removal. Contact Ted at 907- 865-7363 or [tjacobson@ruralcap.com](mailto:tjacobson@ruralcap.com) for further information.

## How you can get funding for Freon removal and training

Ideas for funding sources for getting trained in Freon removal, or hiring a certified person to come to your Village include:

Grant	Website with more information
IGAP	<a href="http://yosemite.epa.gov/R10/TRIBAL.NSF/Grants/IGAP/">http://yosemite.epa.gov/R10/TRIBAL.NSF/Grants/IGAP/</a>
Special IGAP/Unmet needs grants	<a href="http://yosemite.epa.gov/R10/TRIBAL.NSF/Grants/IGAP/">http://yosemite.epa.gov/R10/TRIBAL.NSF/Grants/IGAP/</a>
EPA's Tribal Hazardous Waste Grant	<a href="http://www.epa.gov/indian/grantsandfunding/topic-waste.htm#hwr">http://www.epa.gov/indian/grantsandfunding/topic-waste.htm#hwr</a>
Environmental Justice Grants	<a href="http://www.epa.gov/compliance/environmentaljustice/grants/index.html">http://www.epa.gov/compliance/environmentaljustice/grants/index.html</a>
General funding document	<a href="http://www.zendergroup.org/funding.html">http://www.zendergroup.org/funding.html</a>

If you are looking for further assistance with funding for Freon removal, contact Zender Environmental 907 277 2111 or [ssebalo@zendergroup.org](mailto:ssebalo@zendergroup.org)

## Examples of Villages with Freon removal experience

### Native Village of Aleknagik

Contact: Daniel Chythlook Tel: 842-4407

Aleknagik's Environmental office sent two of their tribal members to Freon removal training in Anchorage (Aurora Refrigeration). The training lasted for three days and now they have certified Freon removal technicians within their own community. They used an EPA Environmental Justice grant to fund their training. Feel free to contact Daniel for more information about their training and experience in Freon removal. Also see his powerpoint presentation on getting his staff trained for Freon removal at [http://www.zendergroup.org/docs/freon\\_alek.pdf](http://www.zendergroup.org/docs/freon_alek.pdf)

### Curyung Tribal Council

Contact: Billy Maines Tel: 842 1751

The Curyung Tribal Council used City of Dillingham staff, who were trained in Freon removal on-site in Dillingham (by Aurora Refrigeration), to remove Freon from appliances. Dillingham carried out another Freon training on-site more recently with Total Reclaim.

### Native Village of Newtok

Contact: Phillip Carl Tel: 237 2314

The Native Village of Newtok was awarded an EPA Tribal Hazardous Waste grant in 2005 and used part of it to get trained in Freon removal and purchase Freon removal equipment for their Freon-containing appliances they have piling up at their dump.

### Togiak Traditional Council

Contact: Phyllis Ayojiak Tel. 493-5821

The Togiak Traditional Council was awarded an EPA Multi-media Demonstration Project grant in 2005 and used part of that funding to host a Freon Removal training in Togiak (by Total Reclaim). Several community residents got trained and certified and have been employed with the City to carry out Freon removal from white goods before staging for backhaul.

## Photos from a Freon Removal Training

