

Other editions: [Mobile](#) | [E-news alerts](#) | [RSS](#) | [Twitter](#)

Find it: [Site Map](#) | [Apartments](#) | [Dating](#) | [Jobs](#) | [Cars](#) | [Real estate](#) | [Classifieds](#) | [Shopping](#) | [Subscribe](#)

Monday, December 29, 2008

honolulu**advertiser**.com

Sponsored by:

Search
All

- All
- Local News
- Calendar
- Jobs
- More »

[Home](#)[Local news](#)[Sports](#)[Business](#)[My Advertiser](#)[Island Life](#)[TGIF](#)[Opinion](#)[Multimedia](#)[Blogs/Forums](#)[Classifieds](#)[Help](#)



Comment, blog & share photos

[Log in](#) | [Become a member](#) | [Find your friends](#)

powered by you and



The Honolulu Advertiser

Local News

Posted on: Sunday, December 28, 2008

EPA approves safer refrigerant developed by Hawaii man

[Read comments \(30\)](#) [Recommend \(20\)](#) [Share](#)



By **Christie Wilson**
Advertiser Maui Bureau

The Environmental Protection Agency has approved a Kane'ohe man's homemade formula for a refrigerant in home appliances and air-conditioners that is safer for consumers and the environment.

ADVERTISEMENT

Richard Maruya designed his HCR-188c hydrocarbon blend as a replacement for refrigerants that deplete the Earth's ozone layer and/or contribute "greenhouse" gases to the atmosphere. His precise mixture of ethane, propane, isobutene, normal butane and other naturally occurring compounds has zero ozone-depleting potential and very low global warming potential.

And, because appliances using HCR-188c require only one-quarter of the usual amount of refrigerant, the danger from fires and leaks is extremely low. Independent testing also has shown that appliances with HCR-188c use less energy and provide a greater degree of cooling.

In April, Maruya was honored with the 2008 Environmental Achievement Award from EPA's Region IX office for his "innovative research" and "unwavering commitment to achieve this environmentally friendly product."

Invention hailed

[Print this page](#) [Email this article](#) [Share](#)



Richard Maruya has been using his newly approved refrigerant in his own vehicle, the only vehicle he can use it in legally, for years.

Advertiser library photo

ADVERTISEMENT

More News headlines

- **Ethanol plant plan advances** [\(6\)](#)
- **Current flu bug may resist Tamiflu medicine** [\(3\)](#)
- **Pet neuter contract awarded to clinic** [\(3\)](#)

The environmental group Greenpeace, which has been working to promote alternative refrigerants since the 1990s, also has hailed Maruya's invention and his determination in the face of a years-long regulatory process.

"It was a long, hard push to get it where it is," said Maruya, who began thinking about a more energy-efficient and environmentally safe refrigerant 15 years ago, after an injury sidelined him from running his service station and machine shop.

"I never imagined all the roadblocks and bumps in the road I would have, not only from the EPA but from people on the outside who told me I was crazy."

Although widely accepted in Europe, Asia and elsewhere, hydrocarbon-based refrigerants were banned in the United States because of concerns about flammability.

Maruya, 60, said a lot of people have been recharging their auto and appliance cooling systems with bootleg hydrocarbon mixtures, "but I wanted to make sure mine was legal. I had to convince the EPA that this was the one."

After more than four years of back-and-forth with the federal agency, the final hurdle Maruya had to clear before approval was persuading the EPA of the miniscule flammability risk from the small amount of HCR-188c needed — about an ounce for a household refrigerator.

"Even if there was a massive leak in the kitchen, even if you had an open flame on a propane stove, it would not ignite," he said.

"We proved it all with solid facts. They couldn't say anything."

A Dec. 12 letter from the EPA's Stratospheric Protection Division said HCR-188C had been approved for

- [Tech tax credits cost Hawaii \\$747 million](#) (47)
- [Korean War Veterans will never forget 'Forgotten War'](#) (7)

Related news from the Web

- [U.S. Environmental Protection Agency](#)
- [Science / Technology](#)
- [Inventions](#)

Powered by [Topix.net](#)

Ads by Pulse 360
[Get Listed Here](#)

"2009 Diet Of The Year."

Finally, A Diet That Really Works! As Seen On CNN, NBC, CBS & Fox News
[www.HeathersWeightBlog.com](#)

1 Rule of a Flat Stomach

Cut down 25 lbs of stomach fat in - 1 month by obeying this 1 rule
[KimsDietPlan.com](#)

1 Flat Stomach Rule: Obey

How I cut 2 lbs of fat per week by obeying this 1 old rule.
[karlasweightloss.com](#)

sale in "white goods" as a substitute coolant fluid in household refrigerators and freezers, and residential and light commercial air-conditioning window units.

Maruya said he immediately contacted Underwriters Laboratory and GE, Whirlpool and other appliance manufacturers about using HCR-188c in their products. He said appliances with his refrigerant could reach consumers by 2010, if not sooner.

Maruya also is continuing to work with the EPA to get HCR-188c approved for use in commercial freezers and air-conditioners and beverage vending machines, and in automobile air-conditioning systems.

The Chinese appliance maker Haier has been supportive of Maruya's efforts, but he is hoping American companies will take the lead.

"Born in the USA. It's got to stay in America," he said.

Biggest obstacle

According to Maruya, one of his biggest obstacles will be persuading skeptical industry engineers that the game-changing refrigerant was devised by a former auto mechanic from Hawai'i experimenting with hydrocarbon blends in a makeshift lab in his patio.

Working in his favor is a 2010 deadline for the phase-out of some commonly used refrigerants that contribute to global warming.

Maruya also will be helped by detailed analyses conducted by respected independent testing firms that showed that refrigerator-freezers running with HCR-188C draw only 68 percent of the total power required when running with the existing refrigerants.

Moreover, refrigerator temperatures were maintained at the same levels using HCR-188c, while the

average freezer temperature was lowered by more than 5 degrees Fahrenheit.

A cost comparison also favors Maruya's hydrocarbon blend, which costs 20 cents per half-ounce charge compared with 62 cents for an equivalent 2-ounce charge of a commonly used refrigerant.

Maruya's formula would replace refrigerants that are based on hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs) that were developed as replacements for ozone-eating chlorofluorocarbons (CFCs). HCFCs have lower ozone-depleting potential than CFCs, while HFCs are not ozone-depleting but, along with HCFCs, have heat-trapping properties that make it a powerful global warming gas when released into the atmosphere.

Maruya's HCR-188C has been independently evaluated to have zero ozone depletion potential and a global warming potential of less than five over 100 years. By comparison, the global warming potentials of HFCs range from 140 to 11,700.

(The global warming potential was developed to compare the ability of greenhouse gases to trap heat in the atmosphere relative to another gas.)

"This was a long struggle. I hocked everything I have," Maruya said. "I figured, shucks, I wasn't going to give up. I was too deep in it. I had to push forward."

He estimates he spent "a couple million" dollars over the years developing HCR-188c and expects to recoup the investment and earn millions more if his refrigerant becomes the industry standard.

Maruya's company, A.S. Trust & Holdings, has patented HCR-188C in the United States, Japan, Korea, China, the United Kingdom, France and Germany.

Reach Christie Wilson at cwilson@honoluluadvertiser.com.

In your voice

Read reactions to this story



bwaikiki wrote:

Congratulations and thank you - and the earth will thank you if politics and the powerful will cooperate.

12/29/2008 5:38:14 a.m.

[Recommend](#)

[New Post](#)

[Reply to this Post](#)

[Report Abuse](#)



Hanzhalawa wrote:

Good going!..... when dealing with environmental issues, especially with the strict federal laws & guidelines to follow, it's a clear achievement from a person of humble beginnings! my hats off to you Mr. Maruya for sticking it out for the long-haul!

Now, go and cash-it in!

12/29/2008 12:28:41 a.m.

[Recommend](#)

[New Post](#)

[Reply to this Post](#)

[Report Abuse](#)



leilaniwhw wrote:

Replying to Akamai1:



Amen for persistence and perserverence! I hope he clocks in the millions which he deserves. Congradulations Mr. Maruya!!

it will probably amount to billions. what cannot be bought is also his for the asking. Im sure this planet will thank him and his decendants for generations !!

12/28/2008 11:57:18 p.m.

[Recommend](#) [New Post](#) [Reply to this Post](#) [Report Abuse](#)



Honothelulu wrote:

Great perseverance, outstanding achievement.

12/28/2008 4:43:15 p.m.

[Recommend \(1\)](#) [New Post](#) [Reply to this Post](#) [Report Abuse](#)



ECEadvocate wrote:

With all that energy savings potential, EXPECT a massive lobbying effort against it's use by HECO

12/28/2008 11:31:48 a.m.

[Recommend \(5\)](#) [New Post](#) [Reply to this Post](#) [Report Abuse](#)

1 2 3 4 5 >> Last

You must be logged in to leave a comment. [Login](#) | [Register](#)

ADVERTISEMENT

HUGO HIGA M.D.

Aesthetic

VISION CENTER

www.aestheticvision.com

COSMETIC FACIAL SURGERY

Rastylante • Botox • Skin Care • Laser • Facelift • Eyelid Surgery

Basic or Custom Prosthetics Intacs

1441 Kapiolani Blvd. Suite #1313 • (808)947.2020

Local partners: [101 Things to Do](#) [4info Around Hawaii](#) [Hawaii.com](#) [Real Cities Network](#)

[Home](#) | [Local news](#) | [Sports](#) | [Business](#) | [My Advertiser](#) | [Island Life](#) | [TGIF](#) | [Opinion](#) | [Multimedia](#) | [Blogs/Forums](#) | [Classifieds](#) | [Help](#) | [Site Map](#)

[Terms of service](#) | [Privacy policy](#) | [Contact us](#) | [About us](#) | [Work for us](#) | [Gannett Foundation](#) | [Subscribe](#)

©COPYRIGHT 2008 The Honolulu Advertiser. All rights reserved.

Use of this site signifies your agreement to the [Terms of Service](#) and [Privacy Policy](#) , updated March 2007.