

Dr. Till soon became responsible for all fast reactor work at Argonne, and continued to emerge as a leader in his field. Chuck wrote several important works examining technical issues of nuclear physics and engineering. Dr. Till has also served on several advisory committees and evaluation boards, and testified numerous times before congressional committees. Notably, Chuck served as technical director and a member of the U.S. delegation to the International Nuclear Fuel Cycle Evaluation, and was largely responsible for the United States retaining its leadership role in fast-reactor technology.

But his greatest contribution, to both his discipline and to the world, lies in the development of the Integral Fast Reactor, the IFR. This inspired source of electrical power has the capability to achieve incredible efficiency in fuel use, while significantly lessening problems associated with reactor safety and nuclear waste. In 1986, the IFR showed that it can protect itself from overheating and meltdown. It does so through the natural physical properties of the materials used rather than by relying on operator intervention or an engineered safety system. The IFR was also designed to burn most of its own waste, as well as that of other reactors and the material from dismantled weapons. Unfortunately, this program was canceled just 2 short years before the proof of concept. I assure my colleagues someday our Nation will regret and reverse this shortsighted decision. But complete or not, the concept and the work done to prove it remain genius and a great contribution to the world.

Through his work on the Integral Fast Reactor program, Dr. Till demonstrated that his technical solutions out paced the ability of the political process to appreciate them. Dr. Till also demonstrated that technical leaders can take scientific material and present them in a manner understandable by citizens and Members of Congress. This skill is what makes Chuck Till such a valuable asset to me in my duties as a Member of the U.S. Senate.

I am pleased and gratified that my work in the Senate has allowed me to get to know Chuck Till and his lovely wife Kay. I cannot question that this is the best decision for them, but Chuck's talents will be missed at Argonne National Lab.

Perhaps the greatest legacy that one can leave is knowing your ideas and work are important enough to be carried on when one departs. We will do that with Chuck Till.

I want to wish Chuck and Kay the very best in retirement and on behalf of a grateful nation, I want to say thank you for your unmatched contributions and service. ●

THE MERITS OF ETHANOL

● Ms. MOSELEY-BRAUN. Mr. President, several months ago, during the debate on the Balanced Budget Act of

1997, some of my colleagues called upon Congress to end its commitment to ethanol.

Ethanol, as my colleagues are aware, is an alcohol-based motor fuel manufactured from corn.

These lawmakers, predominately from oil States, drew their daggers in professed horror, branding Federal support for ethanol as a "deficit buster," or a conspiracy of "corporate welfare."

While I know this mantra has become popular and convenient for many in Congress in recent years, the truth is that, in this instance, it is simply false. I would like to urge my colleagues to examine an excellent essay recently printed in the Wall Street Journal which illustrates the truth about ethanol, and which, I am hopeful, will convince critics to reconsider their position.

The article, entitled "Alcohol and Driving Can Mix," and authored by former Central Intelligence Agency Director James Woolsey, outlines the environmental and energy benefits of replacing gasoline with alcohol fuels, like ethanol.

Mr. President, the concept of alcohol-based fuels is not new. Fifty years ago, an Illinois lawmaker named Everett Dirksen encouraged policymakers to consider "processing our surplus farm crops into an alcohol of 10 percent." In doing so, Dirksen believed, we would "create a market in our own land for our own people."

Half a century later, this idea has become reality. Today, demand for ethanol is estimated at 1.5 billion gallons. There are approximately 50 commercial facilities producing fuel ethanol in more than 20 different States across the country. By 2005, 640 million bushels of corn will be used to produce 1.6 billion gallons of ethanol.

Ethanol has a wide range of benefits, such as its effects on the environment. Ethanol burns more cleanly than gasoline, and, according to the Environmental Protection Agency, diminishes dangerous fossil-based fumes, like carbon monoxide and sulfur, that choke our congested urban areas.

Oil tankers will not spill ethanol into our oceans, killing wildlife. National parks and refuges will not be targets for exploratory drilling. When ethanol supplies run low, you simply grow more corn.

Ethanol also strengthens national security. Ethanol flows not from oil wells in the Middle East, but from grain elevators in the Middle West, using American farmers, and creating American jobs. With each acre of corn, 10 barrels of foreign oil are displaced—up to 70,000 barrels each day.

And for farmers, ethanol creates value-added markets, creating new jobs and boosting rural economic development. According to a recent study conducted by Northwestern University, the 1997 demand for ethanol is expected to create 195,000 new jobs nationwide.

The bottom line is that ethanol is the fuel of the future—and the future is

here. Illinois drivers consume almost 5 billion gallons of gasoline, one-third of which is blended with ethanol. Chicago automotive plants are assembling a new Ford Taurus that runs on 85 percent ethanol. More and more gas stations are offering ethanol as a choice at the pump.

Isn't it worth cultivating an industry that improves the environment and promotes energy independence? Isn't it the responsibility of Congress to foster an economic climate that creates jobs and strengthens domestic industry? Don't we have a commitment to rural America, and a responsibility for its economic future?

Mr. President, I think the answer to these questions is a resounding yes, and that's why I will work to ensure that the Federal commitment to ethanol is kept.

I ask that the text of this article be printed in the RECORD.

The article follows:

ALCOHOL AND DRIVING CAN MIX

(By R. James Woolsey)

President Clinton's global-warming proposal includes some \$5 billion in tax breaks to encourage the development of new technologies to curb carbon dioxide emissions. But promising technologies may already be in the offing. New microbes and biocatalysts with names like *Zymomonas mobilis* and KO-11 have been genetically engineered to produce ethyl alcohol not just from feed grains but also from other plants and common organic wastes. The production of ethyl alcohol from biomass may turn out to be as revolutionary as the production of integrated circuits from silicon, vastly affecting the world's distribution of wealth and the fundamentals of international security.

Replacing gasoline with biomass-derived ethyl alcohol would greatly reduce man-made greenhouse-gas emissions—estimates put carbon dioxide emissions at 1/10th or less than those for gasoline over the life cycle of fuel production and use. Other changes in transportation would be far more costly: Fuel-cell cars, for example, would require retooling Detroit's factories; other efforts would need a vast new infrastructure for fuel distribution; and a major shift toward mass transit seems implausible in many of today's fast-growing, sprawling cities.

In contrast, very little such new investment would be necessary for ethyl alcohol to become a major share of transportation fuel. Older cars' engines are able to burn gasohol (10 percent ethyl alcohol); and a computer chip in the fuel systems of this year's midsize Ford and Chrysler minivans permits the use of up to 85 percent alcohol. Federal fuel economy standards encourage these new "flexible fuel vehicles," and they have fortuitously arrived just as the new technology is ready to reduce alcohol costs. Mixing these fuels with gasoline is now done easily at filling stations that sell gasohol. Environmental costs go down with alcohol: its wide use would lead to a substantial improvement in air quality. And an alcohol spill on an Alaskan shore would produce nothing worse than dispersal, evaporation and possibly some inebriated seals.

VOLATILE COSTS

The one real barrier to ethyl alcohol's replacing a large share of gasoline is production cost, which today is comparatively high and volatile. Alcohol's current feedstock, corn, is subject to the caroming behavior of feed markets. In 1995 its price, normally

around \$100 a ton, nearly doubled, and the production of alcohol for transportation consequently had to be cut by a third. Ethyl alcohol feedstocks have been limited because the yeast that has been used for millennia in fermentation can only convert food crops. But advanced biocatalysts and genetically engineered microbes now make possible the cost-effective conversion of cellulose: grass, trees and biomass waste.

Even at today's fossil fuel prices, it is likely that as ethyl alcohol's cost declines it will come to be used as the emission-reducing oxygenate that is added to gasoline. But the key issue is whether alcohol derived from biomass can become cheap enough to begin to replace gasoline. Over the past 15 years the cost of producing a gallon of alcohol from corn has been cut in half, to about \$1 a gallon. If the new technology were to make it possible for costs to fall another 30 to 40 cents, alcohol would become competitive with gasoline when oil reaches around \$25 a barrel.

Is such a reduction in cost plausible? Consider switch grass, common on the prairie. The U.S. Department of Energy estimates twice as much alcohol could be produced per acre from it than from corn. Since switch grass requires almost no tilling, planting, fertilizing or other use of fuel or chemicals, using it as a feedstock would yield several times more energy than would be consumed during production—far better than with either gasoline or corn-derived alcohol. Switch grass and many biomass crops enrich the soil instead of depleting it. Vastly more of the earth's surface is available to grow such grasses, fast-growing trees and aquatic vegetation than is available for feed grains. For example, thinning forests by removing underbrush and small trees reduces forest fires and preserves wildlife habitat—and some cousin of zymomonas would doubtless love to dine on such scrap brush.

Will oil prices hit \$25 a barrel in a few years, making it possible for even unsubsidized alcohol to replace a large share of gasoline? The Energy Department forecasts a flat market, but the oil bulls have a strong case because of perennial instability in the Mideast and because demand will burgeon as a growing share of the growing population in Asia moves into cities. Fortune magazine noted two years ago that once China's and India's energy consumption per capita reach South Korea's current level, these two countries alone will need almost 120 million barrels of oil a day—nearly double what the world uses today. In spite of oil discoveries elsewhere, it is likely that at least three-fourths of any new demand will be filled from the huge reserves of the Mideast, transferring more than \$1 trillion over the next 15 years to the autocratic (and worse) states of the unstable Persian Gulf alone, in addition to the annual \$90 billion they receive today.

Thus, if genetically engineered microbes and advanced biocatalysts can start a transition from fossil fuels to biofuels, a major Middle East war involving the U.S. would become less likely. We would become freer to support democracies and our friends—Israel, Turkey, Jordan—without weighing whether we might offend an oil state. At the same time, subsistence farmers in Africa and Latin America, paid to grow transportation fuel, would begin to climb out of poverty; Ukraine, rich in fertile land, would become more independent of oil-rich Russia; China would feel less pressure to befriend Iran and to build a big navy to dominate the oil-rich South China Sea.

RURAL PROSPERITY

What's more, new markets for biofuel crops would help rural America to prosper; substantial improvements in air quality

would let EPA Administrator Carol Browner stop worrying about our power lawnmowers and let Detroit produce four-wheel-drive sports vehicles to its heart's content; and the U.S. trade deficit would shrink substantially, reducing Wall Street's propensity to panic whenever the Japanese prime minister gets grumpy about holding U.S. debt.

Who would lose? Chiefly oil-exporting states. But many others would need an attitude check; oil companies, if they resist diversifying; bureaucrats who don't like flexible-fuel vehicles, because they aren't subsidized in their particular fiefdom; environmentalists who don't like them either, because they permit Detroit to build larger cars (the more they burn alcohol, folks, the less you should care); Archer Daniels Midland, which will have to get used to losing its near-monopoly of the ethanol market; and of course Roger Tamraz, because struggles over pipeline routes will become boring.

What would we need to do before the December Kyoto summit? Just announce that, in view of biofuels' advantages, we are going to use government purchases and policies to help give them a stable market until early in the next century while production gears up, somewhat as we did with silicon chips. We might even add that, except for continuing to do basic research and development, we plan to phase out all energy subsidies (including oil's remaining foreign tax credit) toward the end of that period.

Then we could stand back, and let the new bugs and the market do the rest.●

CONGRATULATIONS TO THE CHRIST COMMUNITY CHURCH OF ALLEGAN, MI

● Mr. ABRAHAM. Mr. President, I rise today in celebration of the first Thanksgiving worship in Christ Community Church of Allegan, MI's new meetinghouse. The Christ Community Church's congregation has traveled a long way to get where they are today. Without a church home in December of 1993, a core group of Christian friends gathered to discuss the planting of a new church in the Allegan area. By December of 1996, this dedicated group grew nearly threefold, and was worshipping in a brand new facility built with their own hands and prayers. In just 3 years, a land contract had been drawn up and paid for in full, and a church home was built that could serve up to 350 worshippers.

This faithful assembly of friends derives its members from over a 25-mile outlying area encompassing much of southwestern Michigan. They are a contemporary group concentrating in non-traditional and culturally relevant Christian fellowship. The congregation focuses its energy and resources on local and international missions and ministry. Also, personal familiarity with the Bible and Christian ideals is promoted and nurtured.

Indeed, his Thanksgiving is a special one for the devoted men and women of Christ Community Church. The community is certainly well ministered to by this congregation. As they look forward to building further services and facilities, Christ Community Church will continue to champion the needs of its members and community. Again, it is an honor for me to recognize Christ

Community Church and their first Thanksgiving celebration.●

THE 75TH ANNIVERSARY OF THE ORDER OF AHEPA

● Mr. SARBANES. Mr. President, this past August, I was privileged to address the Order of AHEPA during the celebration of its 75th anniversary in Atlanta, GA, the city of its founding. AHEPA, American Hellenic Educational Progressive Association, the largest Greek-American fraternal organization, has played a pivotal role in bringing Greek-Americans into the mainstream of American life, and promoting the ideals of Hellenic culture. It has also launched significant philanthropic and educational initiatives which have benefited both the Greek-American community and American society at large.

As part of this 75th anniversary commemoration, James Scofield, a past supreme president of AHEPA, prepared for article on the early origins of AHEPA entitled, "Forgotten History: The Klan vs. Americans of Hellenic Heritage in an Era of Hate." This piece, written by Mr. Scofield, recently retired after 30 years as a senior executive at the St. Petersburg, FL, Times, has appeared in the AHEPA magazine and many Greek-American publications.

It records the struggle which Greek-Americans encountered in their effort to participate fully in American society. AHEPA's history, as presented by Mr. Scofield, also reminds us of the extraordinary progress which our country has achieved in providing opportunity for people of all races, religions, and backgrounds.

We are most appreciative to Mr. Scofield for his unique contribution and admonition to continue our efforts to ensure justice and respect for all. I ask that his article be printed in the RECORD.

The article follows:

FORGOTTEN HISTORY: THE KLAN VS. AMERICANS OF HELLENIC HERITAGE IN AN ERA OF HATE

(By James S. Scofield)

AHEPA EMERGES 75 YEARS AGO TO WIN BATTLE AGAINST BIGOTRY

It was 1922, Americans of Hellenic heritage were suffering personal and economic intimidation orchestrated by the revived Ku Klux Klan. It was time for them to unify and organize, to protect and defend life and livelihood.

The widespread and often violent discrimination against immigrants from Greece is an almost forgotten page of American history. This is probably because of their subsequent success and the great accomplishments of their descendants. Very few persons today, Hellenic or not, are even vaguely aware of the massive continental strength of the Klan of the 1920s and its intensive persecution of foreign-born Greeks, including those who had chosen to become American citizens.

They do not know how deeply the evil shadows of bigotry, hatred and intolerance cast their malignant darkness over North America. Perhaps it is time to remind them.