weaknesses. First, the efforts to determine
the risks of chemicals are inconsistent be-
cause the agencies do not assess risks in the
same way. Therefore, they may arrive at dif-
ferent risk estimates for the same chemical.

The GAO found that the USDA’s Na-
tional Residue Program, which is supposed
to ensure that hazardous levels of drugs, pe-
ticides, and other industrial chemicals do
not contaminate meat and poultry, is inade-
quate because testing is not comprehensive and
the methodology for collecting samples is
flawed. The Food Safety and Inspections
Service (FSIS), within the USDA, administers
the program, which is designed to identify
and select chemicals that could pose human health
hazards, conduct residue tests in poultry
and meat for those chemicals, and take enforce-
ment action against those who market prod-
ucts containing dangerous levels of the chemi-
cals. FSIS receives assistance from the EPA,
which establishes residue limits and provides
information on pesticides approved for
domestic use, and the FDA, which does for
approved animal drugs. FSIS collects
samples of meat and poultry from slaughter
plants and U.S. ports of entry and analyzes
them. Any violations are referred to the FDA
for investigation and enforcement action.

The GAO found that FSIS does not
adjust its testing for imported meat and
poultry to include problems with heavy
metal residues or animal drugs and pesti-
cides not allowed in the United States
but used by exporting nations. Thus, FSIS
does not know the extent to which potentially
harmful residues may or may not exist in
imported meat and poultry. Also, said
GAO, FSIS does not always have complete
information on chemicals that are not used
in the United States or on new chemicals
that are created each year.

The GAO also examined the input from
the EPA and the FDA and found that these
agencies are not able to provide all the infor-
mation and assistance the FSIS needs for the
program. One problem is that questions have
been raised about the health and environ-
mental effects of many of the pesticides previ-
ously approved by the EPA, as well as about the
regulatory limits set for their residues in
foods. The EPA is reevaluating these pe-
ticides, but it estimates that it will not com-
plete the reregistration process until 2006.

The GAO also points out that problems
exist with the FDA’s handling of violations
due to limited resources and legislative
restrictions. The FDA investigated only
about 20% of the 21,439 violations that the
FSIS reported to it from 1989 to 1992.
Only one prosecution resulted from these
investigations.

Rather than improving the current sys-
tem, the GAO suggested that an alterna-
tive regulatory system for meat and poultry
be developed. The report discussed an indus-
try-operated risk-based system, overseen and
monitored by the federal government. The
GAO made other recommendations for
the current food safety system, but the office
feels that a better approach is for Congress
to create a single agency responsible for car-
ying out a cohesive set of food safety laws.

The GAO obtained comment from the
USDA, EPA, and HHS, as well as two
industry trade groups that represent over
80% of the meat and poultry industry. All
agreed that a process-oriented, risk-based
approach that tries to prevent residue prob-
lems from occurring would be more effec-
tive than the current system that relies on
limited testing of end products to detect
residues.

The GAO also found problems with the
regulatory laws because of inconsistencies
within the overall federal structure and sys-
tems for controlling chemicals in all foods.
For example, chemicals posing similar risks
are in some cases regulated differently under
different laws. Also, the laws do not require
periodic reevaluations of compounds against
the most current scientific standards, nor do
the laws specifically require the agencies to
monitor environmental contaminants in
food.

The GAO also concluded that end-
product testing and interagency referrals
cannot detect and prevent contaminated
food products from entering the food sup-
ply and do not effectively penalize violators
and deter future violations. The GAO says
that agencies do not have enough resources
to effectively carry out end-product testing,
which requires extensive resources to obtain
comprehensive information on chemicals
and develop test methods to detect all
chemicals of concern.

To mitigate the problems with the cur-
rent fragmented system, the GAO recom-
ends that Congress enact uniform food
safety laws that resolve differences in chemi-
cal standards and provide agencies with ade-
quate oversight authorities, as well as direct
department to develop systems that prevent
problems, rather than simply identify them.
The report also recommends that Congress
should require that all foods eligible for
import be produced under equivalent food
safety systems.

The GAO received comments on these
recommendations for changes in the system
from USDA, the Department of Com-
merce, EPA, and FDA. USDA and the
Department of Commerce generally gen-
nerated support for the GAO’s recommendations.
The EPA disagreed with the recommenda-
tion that a single food safety agency is needed
and suggested that an interagency council
be created instead. FDA did not concur
with the report, saying that the information
is outdated and does not support the con-
clusions and recommendations. However,
the GAO said in response to FDA’s com-
ments that the information in the report
was compiled from reports issued from
1990 to 1994.

The reports, “USDA’s Role under the
National Residue Program Should Be
Reevaluated” and “Changes Needed to
Minimize Unsafe Chemicals in Food,” were
requested by the Subcommittee on Human
Resources and Intergovernmental Relations of
the House Committee on Government
Operations.

French Fry Fuel
French fry grease and potatoes may fuel
trucks and buses in the future. Research by
the University of Idaho and the J.R.
Simpot Company, which producers french
fries in Idaho, is examining the possible use
of waste vegetable oil and fermented waste potatoes to fuel diesel engines.

The idea of recycling the waste of french fry plants into fuel sprang from 20 years of research at the University of Idaho. Researchers at the university have been investigating the use of waste vegetable oil as an alternative fuel since, "back in the energy crisis days," said Charles Peterson, a professor of agricultural engineering and a researcher at the university. Researchers speculate that the diesel fuel substitute, called biodiesel, could alleviate the country's reliance on imported oil. They estimate that converting 10% of America's cropland to the production of biodiesel could provide all the diesel fuel used in U.S. agriculture.

In addition, the environmental benefits of biodiesel are numerous, and research at the university has found that it is much more environmentally friendly than diesel. Use of vegetable oil and alcohol-based fuels could lead to a zero net gain in oxides of carbon emissions, scientists say, because they are part of the natural cycle of assimilation of carbon dioxide by plants for growth and development. Also, because vegetable oil has negligible levels of sulfur, its emissions of sulfur dioxide are lower than those of diesel fuel, thus reducing the potential for acid rain.

Biodiesel has also been found to be less threatening to the environment and wildlife than diesel in the case of spills. The fuel is biodegradable and breaks down quickly, preventing long-term damage to soil and water. Tests show that water bugs that succumbed to only minimal diesel spills survived biodiesel spills 70 times greater, Peterson said.

In addition, the production of biodiesel could help with another environmental problem: crowded landfills. Excess waste oils and animal fats generated from various plants and companies could be used in creating fuel, rather than taking up space in landfills.

Converting vegetable oil to biodiesel involves a process called transesterification. This process uses alcohol, methanol, or ethanol, in the presence of a catalyst such as sodium hydroxide or potassium hydroxide, to chemically break the molecule of the raw vegetable oil into a methyl or ethyl ester of vegetable oil and glycerol. Researchers at the University of Idaho have been successful in producing biodiesel from raw vegetable oil, and are now looking at using waste vegetable oil, such as that used in the production of french fries.

If they can develop a fuel that is comparable to the biodiesel made from raw vegetable oil, the Simplot Company will look at marketing and selling the product. According to Paul Mann, Simplot's managing director of production planning and ethanol sales, the company began talking to the university researchers about a year ago. Simplot seemed like a good candidate for manufacturing biodiesel because it produces waste vegetable oil and ethanol, both of which are needed in transesterification.

The waste vegetable oil that is left over after producing french fries has been sold for use in cattle feed or pet food, Mann said. The ethanol is produced by grinding the waste starchy parts of the potato solids and fermenting them, and is also sold, he said.

Both the waste oil and the ethanol currently have markets, so they are not ending up in landfills. If they could be used instead in the production of biodiesel, Simplot may agree to change their current uses in order to serve a better purpose, Mann said.

Mann said that the company's original concern was whether there would be a market for biodiesel. However, after looking at the research and discussing the possibilities, Mann said he and others have decided that
most likely, "if it could be made, it could be sold." One of the problems that the company would face in trying to sell the fuel is its high price tag, which is due to production costs and feedstock costs, or costs of the materials needed for production, according to Mann.

But much more research needs to be done before these issues are decided. Simplots will continue to follow the research on biodiesel, while the University of Idaho tries to work out the problems. Mann said the major problem the researchers now face involves the differences between raw vegetable oil and waste vegetable oil. He said that the oil used in the production of french fries is chemically modified in its raw state in order to raise its melting point, thus improving its ability to cook french fries. At the same time, this chemical modification also raises the oil’s cloud point, the temperature at which solids begin to form. This poses a problem when used in biodiesel, because the fuel has to be kept at a certain temperature to prevent it from crystallizing. If the fuel has a high cloud point, it will crystallize at low temperatures during the winter. Researchers are now trying to lower the cloud point of the biodiesel made from waste vegetable oil.

If Simplot markets biodiesel, the company would focus on the environmental benefits of the fuel, marketing it for use by trucks, buses, and heavy machinery in environmentally sensitive or smog-prone areas. The success of biodiesel would depend on whether potential consumers believe the environmental benefits outweigh the costs. New air quality regulations and national mandates are being introduced that urge government and industry to begin using alternative fuels. Such regulations could raise interest in biodiesel. Because of the high price, however, biodiesel would probably not be sold at the corner pump. Mann said. Simplot will await the outcomes of this research before making any decisions about investment. "We’re not going to jump in with both feet tomorrow," Mann said. "But it could be an opportunity in the future because we do have two of the major ingredients."