Waste

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mental [redacted] Division

An Investigative Study by

...nal Toxics Campaign Fund

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May 1992

Inconclusive by Design:
Waste, Fraud and Abuse in Federal Environmental Health Research

An Investigative Study by the Environmental Health Network and the National Toxics Campaign Fund

One of the conspicuous casualties in the war against toxic wastes is the public's [illegible] regard for public health officials... More often than anyone would like, frustrated and concerned citizens have received little sympathy, understanding, or help from local, state, or federal health agencies. Instead, officials have tried to minimize public [illegible]

Community Health and Safety Project Committee Members

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icated To The Memo

This Report Is Ded

Of The Uncounted Multitudes
Whose Lives Were Taken by Toxic Pollution

INCONCLUSIVE BY DESIGN

Waste, Fraud and Abuse in Federal Environmental Health Research

and the National Toxics Campaign Fund

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ystemic Solutions

But instead of systematically applying precautionary public health principles consistent with their legal and ethical duties, the federal agencies have engaged in politically-driven "risk assessments" which have become virtual propaganda tools of polluting industries, making public protection their foremost focus. One result has been an increase in public [illegible] instead of public protection, complacency and government inaction at many sites where further precautions to reduce toxic exposures are merited.

The methods of risk assessment have varied somewhat, but underlying most of their activities is a single theme. The studies in which they are engaged often may appear to be formal and scientific, but behind this veneer are *inconclusive by design*. [illegible]

[illegible] studied, including refusals to study the sickest populations in relevant communities;

- o Inadequate contact with populations being
- o Reliance upon testing techniques entirely inappropriate to the type of exposure that is involved;
- o Reliance upon statistical methods of inquiry which are entirely unsuited to the small and mobile populations residing around waste sites;
- o Contracting with researchers who are known to be biased in favor of finding no connection between toxic pollution and disease;
- o Studying the wrong types of illnesses, e.g. focusing on death studies where health problems experienced to date have been nonlethal, such as respiratory illnesses or reproductive problems.

[illegible] of these research designs flaws has become virtually routine. Quite [illegible] of an association between disease and exposure is drawn in studies and [illegible] predictably, no finding [illegible] rently cost over $30 million per year in federal tax monies. The [illegible] assessments which cur[illegible] cancern and justify cutting corners on remedial expenditures needed to [illegible] of taxpayer money, they are jeopardizing [illegible] toxics. This, in addition to wasting billions of [illegible] public health. More rigorous public health evaluati[illegible] communities should be [illegible] and precautionary measures to reduce public exposures to chemical wastes.

[illegible]al Health Threat

[illegible]ion of synthetic chemicals in the United States, during [illegible] aware that at many locations, [illegible] Through the federal Superfund [illegible] much as one trillion pounds of toxic [illegible] chemicals to air, water and land continues today. A[illegible] chemicals are emitted to the environment [illegible]

A Massive Environment[illegible]

After decades of sharply rising product[illegible] the 1980's our society suddenly became[illegible] become saturated with chemical wastes.

Many of these chemicals have been shown through testing on animals, by nationwide epidemiological data, and by workplace exposure data, to pose strong cancer hazards [illegible]. Together [illegible] they are capable of attacking virtually every organ system of the human body.

As our environment has become saturated with man-made chemicals, so has the human population. In apparent correspondence to the exposure trend, incidences of cancer and other diseases are rising rapidly in the American population. Since 1950, the incidence of cancer per 100,000 U.S. citizens rose by 42.2%. Between 1980 and 1987, the prevalence of asthma increased 29% among Americans. The National Cancer Institute reported a 28 percent increase in the incidence of childhood cancer from 1950 to [illegible]. Various studies have demonstrated clear associations between childhood cancers and exposure to chemicals. Fertility [illegible] is decreasing among Americans in their prime reproductive years (their 20's).

With this correlation between exposure to toxic chemicals and shifting health conditions in our population, the federal environmental health agencies have been charged with assessing pollution hazards and recommending precautionary measures.

Centers For Disease Control

Superfund Whitewashes

In communities where CDC has assessed Superfund sites, residents and their experts assert that the agency has engaged in whitewashes of pollution impacts. [illegible] health impact from toxic sites, sometimes very deliberately omitting strong evidence of severe impacts. At Times Beach, Missouri, where citizens were evacuated due to the toxic hazards posed by dioxin, CDC concluded that the residents suffered no health effects from [illegible] dioxin exposure. [illegible] residents from the study because, according to [illegible] these included four people with chloracne symptoms (chloracne is a skin disease caused by dioxin) [illegible] were too ill to participate. In contrast to CDC's biased inquiry, other studies of former Times Beach residents showed distinct evidence of immune system abnormalities.

At Love Canal, the site in New York State that first focused the nation's attention on the dire consequences of toxic waste, CDC attempted to [illegible] a special health study into a study [illegible] and birth defects in the community was blocked by the residents, CDC botched a second study [illegible] with a defective methodology, [illegible]

In Jacksonville, Arkansas, where one-quarter of the defoliant Agent Orange used in the Vietnam war was manufactured, there occurred an outbreak of Sudden Infant Death Syndrome (SIDS) seemed to local physicians to be related to a chemical waste disposal site. But CDC narrowly limited its study of health effects in the community, and refused to test the tissues of one hundred SIDS victims which a physician at the Arkansas Children's Hospital believed to contain high levels of toxic chemicals.

Intentionally Misleading Congress, EPA and the Public on Dioxin

At the helm of CDC's environmental health efforts has been [redacted], Vernon Houk, Director of CDC's Center for Environmental Health. Dr. Houk has been [redacted] environmental exposures cause illness. [redacted] dioxin [redacted] scientific community as one of [redacted] compound is notorious within [redacted] 1980's the safe exposure level for [redacted] man-made chemicals known to [redacted]

ATSDR has also failed to engage in appropriate contact with communities after completing its

Superfund site in Uniontown, Ohio [illegible] 15 homes along the margin of the Superfund [illegible] from Uniontown. ATSDR Assistant Administrator Barry [illegible] has stated that ATSDR [illegible] effort to protect the health of Uniontown residents.

ATSDR Health Studies are Inconclusive by Design

After ATSDR completes health assessments, the agency sometimes conducts more in-depth health *studies*. These studies have been plagued with credibility problems [illegible] scientific and statistical [illegible] incapable of drawing any reliable conclusions regarding environmental health problems.

ATSDR has largely relied upon traditional epidemiological approaches in their studies, even though the [illegible] statistical approaches employed by epidemiology are not readily adaptable to hazardous waste sites. When [illegible] applied to the small populations involved in a particular neighborhood around a hazardous waste site, such studies ordinarily result in "inconclusive" [illegible] This is entirely predictable [illegible] statistical types of analyses do not work when the sample [illegible] population is small and there are numerous other potentially confounding variables. Even if [illegible] cancer were double or triple the normal rate for the population in many small [illegible]

activities that are inappropriate or inconsistent with the
preferences and concerns of the
affected local publi

visit only 165 of the more than 950 health assessments it has conducted;
ATSDR plans to r
to revisit any of its earlier health *studies*. By "locking in the
there are no plans
accurate appraisal of the risks to many communities previously assessed may be und
the hazards to which they are
exposed

KEY RECOMMEND

Placing primary emphasis on environmental health. The primary role
of federal environmen
precautionary measu
and in particular Vernon
appeared from the outset to be biased against comm
should explore the elimination of CDC's Center for Environmental
all environmental health responsibilities from CDC to ATSDR.

End federal funding of studies which
which is conducted solely to advance
should be provided for community health studies for which conclusive

Revisit past ATSDR assessments and studies. ATSDR should thoroughly revisit all
assessments and health studies con

Expand ATSDR budget and authority, and create
established as an independent Federal agency with authority, mandates, budget and
action should include the power to ord
the relocation of residents in areas contaminated
ATSDR makes
there should be a mandated time-frame within which
to follow up on ATSDR recom

nducted after the

Establish health technical assistance grants. Health studies should only be co

Overhaul health assessment and health studies procedures. Health assessment and health studies processes must be overhauled. The fundamental direction of such studies should be to aid [illegible] and local communities in applying precautionary principles to end [illegible] The local community's right to veto the undertaking of health studies should be explicitly in federal legislation. Experts utilized for such studies should be thoroughly scrutinized for biases and their public reputations; private universities and experts should be added to the pool of experts available for such studies.

Fund environmental health literacy. Environmental health education under ATSDR's mandate should be expanded. Congress should establish a community environmental health training program [illegible] and conducted by universities and by public health advocacy [illegible] the training should be to educate communities on health hazards [illegible] institutions. The purpose of

sources often find it economically and technically impossible to bring suits due to the high costs of evidence, and the over-reliance by many courts on epidemiological studies. As this report documents, such studies, by their very nature, are unlikely to produce conclusive results [illegible] waste [illegible] Congress should establish a system [illegible] to compensate [illegible] for people whose diseases are likely [illegible] to chemicals which [illegible] disease. Examples might include [illegible] ensuring treatment for bladder cancer for people exposed to 4-aminobiphenyl and for [illegible] leukemia where there was exposure to vinyl chloride, benzene, and ethylene [illegible]

[illegible] practical way to eliminate a portion of [illegible] available health care together [illegible] residents are unable to [illegible]

[illegible] exposed to toxic releases or establish a right to [illegible] exposed. The presence of certain chemicals combined with [illegible] to exposure would trigger the right to care. [illegible]

Finally, a national health care program may be the only [illegible] the injustices suffered in toxic-exposed communities. [illegible] assistance or access to [illegible] communities we have studied, chemical exposures and the lack of [illegible] exacerbate the cycle of ill health and financial problems that local [illegible] escape. [illegible]

Chapter One:

THE ENVIRONMENTAL HEALTH CRISIS

adequately identifying, assessing or ranking
exposures and their potential effects on
ent public policy methods that a margin of
ed regarding potential health risks from
zardous waste sites. We do no less in establishing
criteria for scientific credibility. We must exclude no [illegible]
when the health and quality of life of Americans are at stake.

"[T]he nation is not
hazardous waste site
public health. [P]rim
safety be provi
exposures to ha
designing [illegible]

National Academy of Sciences, 1991[1]

Since 1940, the annual production of synthetic

required for the first time to disclose the amount of toxic chemicals they discharge to air, water and land. In 1989, according to EPA, 22,650 industrial plants reported releasing 3.78 billion pounds of toxic chemicals into the air, land and water. Total emissions are actually far higher, since the 330 hazardous substances tracked by the EPA's Toxic Release Inventory do not include more than 2,500 other chemicals regulated under other environmental laws. In addition, many companies are flouting the Right to Know law, withholding the legally required information. [illegible] told one analysis has estimated that a more accurate assessment of toxic emissions in the U.S. is about [illegible]

impairments seemingly correlated with polluted air, water, or soil.[7] For

[redacted]

solvents and paints.)[8]

[redacted]

[redacted]

[redacted]

Two Chapter Two

Historical Background on the Federal Public Health Agencies

In case after case, otherwise inexplicable clusters of illness have emerged [illegible] Public Demand [illegible] toxic site[illegible] carcinogenic have surfaced in chronic epidemics of [illegible] miscarriages, birth defects, and cancers as well as respiratory disease, skin [illegible] Assista[illegible] disease, and depressed immune systems. Not every person who gets sick near [illegible] a hazardous waste site does so because of [illegible] in the soil. Yet very often [illegible] there is strong circumstantial evidence to [illegible] illnesses derive from toxic exposu[illegible]

Connecting toxic pollution with specific [illegible] cases of illness is scientifically difficult and politically charged. In an ironic turning of the tables, sick people residing near toxic waste sites often have been treated by local officials as if they are mere trouble-makers or publicity hounds, or at best, as victims of randomly occurring illness who seek to pin the blame on the nearest target. Not surprisingly, the victims of these sites often look to [illegible]

and other early toxic sites.

Congress charged the Agency for Toxic Substances and Disease Registry (ATSDR), in the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund), with assuming a principal role in identifying health problems related to the release of hazardous substances into the environment and to establish public health strategies to prevent or mitigate

Chapter Three

The Centers for Disease Control: A Legacy of Environmental

Another CDC study was planned, this time assessing chromosome damage by drawing blood. But by then a few years had passed and the [illegible] residents were wary of such a statistical review. Too many residents had [illegible] moved from the area, in some cases having been away for as long as [illegible] years. This would bias the study [illegible] the most heavily exposed [illegible] redirect the money toward a study that would more likely detect [illegible] reproductive problems. Their efforts did not prevail [illegible] proceeded with its chromosome study and found no abnormal statistics among the residents.[19]

Times Beach

The Citizen's Clearinghouse for Hazardous Wastes, which published a 1985 report detailing CDC's look-the-other-way approach, also recounts the [illegible] evacuated due to the toxic hazard posed by dioxin. In its study of the contamination there, which resulted from waste oils sprayed on local roads to [illegible] dust, CDC selected 82 people [illegible] had been asked to fill out questionnaires. CDC's conclusion [illegible] showed no abnormal effects from dioxin exposure. But many residents [illegible] complained that [illegible] they were too ill to participate.[20] CDC reported no cases of chloracne (a skin disease caused by dioxin exposure), yet in its own report stated that *four people with chloracne symptoms had been eliminated from the study.* [illegible] showed distinct evidence of immune system abnormalities in former residents of the area.[21]

Jacksonville, Arkansas

[illegible] one-quarter of the herbicide Agent Orange [illegible] manufactured. At the site of manufacture, dioxin residues have been measured in soil samples at levels well above the [illegible] [Agent Or]ange that led to the evacuation of Times Beach. In 1983, after numerous citizens complained about ill health, Arkansas health director, Dr. Ben Saltzman, requested help from CDC. CDC agreed to analyze data on the health effects of toxic chemicals in Jacksonville. At that time, the only other tests had been conducted by the Mount Sinai Medical Center, which found "effects of unknown significance" on nerve conduction in [illegible] percent of 55 former chemical plant workers tested. Despite [illegible] a state recommendation that all toxics be considered in the CDC's investigation, CDC examined only the EPA's measured dioxin levels [illegible] Jacksonville [illegible]

In July 1985, CDC decided not to undertake a fatty-tissue study of residents. Their reasoning, which was contradicted by EPA studies, [illegible] Jacksonville's dioxin problem was not as severe as that of Times Beach. In December 1985, tests by the Arkansas Children's Hospital detected high levels of several man-made chemicals in the tissues of a victim of Sudden Infant Death Syndrome (SIDS). CDC, however, refused the hospital's request for further investigation of this SIDS case. CDC also refused to conduct assays on the tissues of approximately one hundred other SIDS victims which were [illegible]

then stored at the same hospital.[22] (See case study: Jacksonville, Arkansas ... page 26.)

Dioxin Scandal

Since the inception of CDC's Center for Environmental Health, Dr. Vernon Houk has been its director ... the government's most senior post ...

... epidemiological specialist with the JSI Research & Training Institute in Boston and former Director of the Massachusetts Cancer Registry: "Historically, Dr. Houk has ... the idea that environmental exposures cause significant human disease. Certainly when it comes to hazardous waste site exposure, he has not been open to that possibility." Dr. Houk's handling of ... dioxin issues ... biases and abuses which have become routine for ... CDC.

Dioxin is widely known within the scientific community as one of the most toxic man-made chemicals known. In the early 1980's the safe exposure level ... for dioxin ...

Houk arranged for blood tests of 646 Vietnam veterans, selected on the basis of their probable exposure, to look for elevated levels of dioxin in blood.

blood levels. But this was no surprise, since the exposures

None had abnormal

were 20 years earlier and could

White House Block Federal Action on Lead

At times, CDC's weakness in protecting health has been driven clearly and directly by political pressure from the White House. A recent example under the Bush Administration involved children's exposure to lead, which can cause severe damage to the developing nervous

assessments. The report concluded that the assessments were of questionable

concentrations that may result in adverse health effects."[36] The local

nidwater. Almost a year
race Community Action
ld a press conference
ort to staff. (See Section
.)

identified on-site contaminants and polluted gro
after the assessment was completed, the Carver Te
Group learned of its existence and content. They be
describing EPA as "irresponsible" for keeping the re
Study: Texarkana, Texas page 2

articularly deficient at 117 defense-related
nd NPL list. U.S. Congressman Gerry
PSU's situation at a congressional hearing in

Deficient Assessments at Department of

Health assessments have been p
Federal facilities on the Superfu
Sikorski (D-MN) presided. A
Defense (DOD) officials

ithin a
year of the date on which the sites were proposed for the
EPA's NPL Superfund list. Even though some of these sites
have been listed for many years, as of January

ATSDR has a fundamental credibility problem because of its subordinate relationships to both CDC and EPA.

CDC and ATSDR function under separate congressional mandates, but they are joined at the top as arms of the Public Health Service. Prior to 1986 when the Superfund law was amended, ATSDR was no more than a CDC

[redacted] the institutional memory and biases of CDC have simply been transferred into
[redacted] ATSDR because CDC has such a poor reputation with
[redacted] communities on pollution-related issues. ATSDR has slo
[redacted] effort to further separate itself from its mother agency.

Agency is another
ns based on scientific
[redacted]

ATSDR's relationship to the Environmental Protection
serious impediment to ATSDR's ability to make decisio
[redacted]

vindication of [illegible] problems often look to government-sponsored studies for [illegible] of citizens' beliefs that toxic waste is [illegible]

n action to [illegible] want to see the studies followed w[illegible]

the reality has been that [illegible] by [illegible]

ublic health officials seldom has provided either [illegible]

ommunities are often misled into thinking that the insensitive studies funded [illegible]

[illegible] contaminants including the cancer-causing chemicals hydrazine and [illegible] trichlorethylene through its drinking water supply. Four childhood cancer cases occurred in the neighborhood; twice as many as would be expected if the average number of cases occurred. But according to Dr. David Ozonoff [illegible] testified in a court case on this situation, an eight fold [illegible] epidemiologists to declare [illegible] rather than a simple doubling, would be needed for the statistical increase to be "significant" in view of [illegible] population reviewed. This does not mean that the cases in [illegible] not attributable to the chemical exposures; it only means that epidemiologists are by their blunt tools incapable of drawing the correlation.

Environmental epidemiology can work, but only where there are large exposed populations or tightly controlled laboratory conditions.[50]

Added to the problem of sample size in epidemiological studies of community toxics exposures are other confounding variables to muddy the findings. [illegible] Typically these variables include a lack of detailed information on chemical exposure levels; the presence of multiple chemicals at a single site; exposure of the population to other disease promoters such as cigarette smoke; the movement of many exposed people out of study areas making study samples incomplete; and the long lag times that typically occur from exposure until the [illegible] of symptoms. Each of these variables [illegible] the conclusiveness of epidemiology studies at Superfund sites. As a result, most [illegible]

[illegible] review conducted for the community of North Hampton [illegible] department cancer [illegible] The methodology used in this study is not capable of either proving or disproving a causal relationship between any specific exposure and any disease. (See Case Study on North Hampton, New Hampshire [illegible]) [illegible] an apologetic statement is included even in studies where a neighborhood has numerous people exhibiting strong clinical proof of the connection between their toxic exposures and their illnesses.[51]

The outcome of the proliferation of these "inconclusive by design" studies is a predictably [illegible] record of equivocating reports. For instance, out of 108 studies by CDC following cancer clusters over 22 years, [illegible] revealed [illegible] clear cause.

Although various strategies can be employed to improve the quality of [illegible] studies, so far the situation is not being improved. For instance, to solve the problem of keeping track of exposed populations for a long enough time to track the manifestation of diseases after long latency periods, ATSDR [illegible] required by law to establish registries. Instead of a National Exposure Registry, the agency has only established experimental exposure registries [illegible] A National Disease Registry, [illegible] illnesses due to possible toxic effects, is not yet operational.

n statistics such as death statistics. ATSDR

In addition to the use of populati

sometimes test biological markers to determine the extent of exposure

Misusing

"clean" blood.

more extreme example of this kind of action [illegible] In an even
[illegible] Director of the National Toxic Campaign Fund [illegible]
[illegible] experience of her own town of Gray, Maine, where residents had been
exposed to volatile organic compounds in the drinking water. After that
[illegible] to the drinking water had ended federal officials conducted a
blood tests to check for volatile compounds. A CDC physician who was
administering the tests was asked what he expected to find. He said that he
expected to find anything. Given the fact that exposure to the substances
of concern had ended months before, this was of course, quite accurate. It
appears that the blood testing process was [illegible] to give people a "clean"
bill of health. This inaccurate blood test might have the appearance of being
[illegible]

[illegible] a commitment to paying state health departments [illegible] to
conduct health investigations and health assessments. Under its cooperative agreement [illegible] with
23 states by the beginning of fiscal year 1990.

Hiring the Wrong Investigators

health departments are a poor choice for

However, many of these state

"We are concerned that populations may be at risk that have not been adequately identified, because of the inadequate program of site... assessment."[60] Moreover, they stated that while they "are currently unable to answer the question of the overall impact on public health of hazardous wastes ... [until] better evidence is developed, prudent public policy demands that a margin of safety be provided regarding potential risk. We do no less in designing bridges and buildings. We do no less in establishing criteria ... of scientific certainty. We must surely do no less when we [are] dealing with ... of life of Americans are at stake."[61]

Health studies in the absence of action recommendations do not adequately

Studying

Death

ensure treatment or relocation of the lead-exposed children. Instead, the

g effort, and has turned a deaf [illegible] agency has merely engaged in a data-gatherin

ect health.[62]

ear to citizens' calls for genuine action to pro

Texarkana, Texas

An ATSDR health assessment of the Carver Terrace neighborhood indicated that "Long-term exposures to contaminated soils in the residential area pose a potential health risk for ingestion and skin absorption of soil contaminants," and that "Groundwater beneath the site is contaminated and would pose a potential health risk if used for potable drinking water purposes."[63] The ATSDR assessment told of at least 35 identified on-site contaminants such as [illegible] including cancer-causing dioxins and furans. Some of these, water, and pentachlorophenol, were detected in sub-surface soil, ground e soil. ATSDR also described 15 off-site contaminants of concern, some surfac n also in more than one medium. of the

state officials to investigate the area's rate of miscarriages, after personally
[illegible] reports of miscarriages out of approximately 67 pregnancies within [illegible]
[illegible] 26-month period. Funded by ATSDR with technical assistance being pro-
vided by the Tulane University School of Public Health and Tropical Medicine,
conducted a health study. The original ATSDR protocol specified door-to-
door interviews by trained professionals that specification was removed
[illegible] recruiting study participants by public notices and mailings. These [illegible]
[illegible] then interviewed over the phone by college students from [illegible]

levels in blood samples were higher than national levels. Some individuals

were found with inordinately high levels of [illegible]

ATSDR the majority were "for the most part" within the typical range of the

[illegible] and symptoms in the

communities remain.

[illegible] were dumped

[illegible] *North Hampton*, Adjacen

under the cover of darkness, residents' well water became severely

New Hampshire for years.

contaminated. Several residents contracted extraordinary

enlarged organ systems, which led to heart attacks and other organ failures

1988, the closest to an actual health study was done by a local resident. Wh

knocked on doors asking her neighbors about he

health assessors knocked on no doors at all. Ins

information gathered by the state, whose own study

examination of death certificates. The residents cannot unders

ATSDR has passed over the

depth health studies, especia

cancer rate in the entire stat

ly given the fact that their area has the highest

e.

prepare profiles of pollutants' toxicological

ATSDR

ATSDR is required by law t

SOME STEPS CITIZENS CAN TAKE TO IMPROVE ATSDR

Petition for health assessments. The Superfund Act requires ATSDR to consider all petitions filed for health assessments at sites of hazardous material releases. A petition by an individual or a group requesting a health assessment should include:

- Name, address, and telephone number.
- Organization represented, if any.

Despite these marginal improvements, the fundamental shortcomings of

The agency has also begun establishing more community advisory panels. However, such panels have been established by ATSDR in the past without

community advisory panels may be merely

ploy, unless these panels are given real pow

How Many Deaths

Chapter Five:

The Local Experience: Five Case Studies

JACKSONVILLE, ARKANSAS

In Jacksonville, Arkansas, a community of 29,000 residents located 12 miles northeast of the State capitol of Little Rock, dioxin has been measured in soil at levels well above the range that led to EPA's 1983 evacuation of Times Beach, Missouri. For more than 40 years, three different companies manufactured a host of toxic chemicals here -- including approximately one-quarter of the "Agent Orange" used to defoliate the jungles of Vietnam. Today, EPA is moving forward with plans to incinerate [illegible] 30,000 [illegible] barrels of toxic waste still contained behind the closed plant gates of the last [illegible] occupant, Vertac Chemical Corporation.

In 1983, after numerous citizens complained about ill health, Arkansas [illegible] Disease Control. CDC agreed to analyze data on Jacksonville chemicals. At that point, the only other tests that had been conducted were by the Mount Sinai Medical Center. They found "effects of unknown significance" on nerve conduction in 46 percent of the 55 former chemical plant workers tested.

Despite a state recommendation that all toxics be considered in CDC's investigation, CDC examined only EPA's measured dioxin levels in Jacksonville. In July 1985, CDC decided not to undertake a fatty-tissue study of [illegible]. Their reasoning, which was contradicted by EPA studies, was that Jacksonville's dioxin problem was not as severe as that of Times Beach, Missouri.

An informal survey taken in 1985 by the Arkansas Democrat newspaper of children living near to two Superfund dump sites in Jacksonville, found 10 of [illegible] with serious health problems, including spina bifida (a failure of the spinal column to close), [illegible] heart, and a baby born with part of her brain outside the skull. One of seven

thought we had all the material they needed to get some very definitive answers, and their excuse made no sense to me."

After CDC turned down further testing of the Shelton baby, Dr. Brewster

assays, including the Shelton's, for a $10,000 fee. In the interim, Dr. Brewster

s of SIDS victims being preserved

reports that one hundred other tissue sample

dangerous. I feel now that I should have gathered them in a safe," she says.

Finally, under prodding from Arkansas doctors and health officials, CDC di

to do a study to gauge whether excessive levels of chemicals in

control groups of 100 children from Jacksonville and Conway, a town 30

miles away. The study did not show substantially higher levels of

chlorophenols in the Jacksonville children, although some doctors questioned

the wisdom of comparing samples from communities

Dr. Brewster then asked state health officials if they could obtain CDC's

urine of the Jacksonville children, but her request was

samples from th

were too small to test," says Dr. Brewster.

Paul Connett, a biochemist at New York's St. Lawrence University,

off further investigation into the sudden

from dioxin or related chemicals. And once that can be shown, it's a wid

different kill zones for the Vietnam veterans exposed to Agent Orange

for many ot

TEXARKANA, TEXAS

About a mile from the Texas-Arkansas state line and approximately one-and-a-half miles west of downtown Texarkana, a city of 33,000, lies a residential area kno

as the Carver Terrace Subdivision. Its citizens are all black

, their family incomes averaging between $10,000 and $20,000 annually.

When a business consortium

2 acres of land and built 79

The neighborhood has existed since 1964.

called Carver Terrace, Inc. purchased these 6

single-family homes on the north side.

Only three years prior to the founding of Carver Terrace - and for over fifty years before that - activity of an entirely different [illegible] had taken place on these 62 acres. EPA summarizes the history: "In 1910 the National Lumber and Creosote Company began operating a wood treatment facility at this site. In 1938, the land and the wood treatment facility were sold to the Wood Preserving Corporation, which was eventually acquired by Koppers Company. Koppers Company conducted wood preserving operations until 1961 when they closed the facility and sold the land."75

J.E. "Sonny" Fields, who has lived there since Carver Terrace's beginnings, three years after Koppers departed, remembers: "There was always a smell. All over this vicinity, even in the outlying areas. It gets strong at times. [illegible]" What kind of smell? "Creosote. But nobody knew it was a hazard to their [illegible] ... sick back in the earlier days never knew what was wrong, or the cause, until these test results began to leak out. The first test taken out here never was made public. That was before 1980."76

EPA recounts: "In the early 1980's, the State of Texas and Koppers Company found that soil and ground water were contaminated with chemicals commonly used to preserve wood: pentachlorophenol (PCP), arsenic, and creosote. In [illegible] ... Superfund program. [illegible] Responsible Parties (PRP's) for the site, to place clean soil and sod in the yards of some homes in the Carver Terrace subdivision to prevent residents from being exposed to contaminated soils while the site was being studied. [illegible] The Koppers Company agreed to conduct a Remedial Investigation and Feasibility Study (RI/FS) of the site. The RI determined the types, amounts and location of contaminants...

"In September 198[illegible], after [RI/FS] completion, EPA selected Mechanical Soil Washing as the method to treat contaminated soils on the site, to prevent an additional risk of [illegible] from exposure to contaminated soils below the ground surface."77

Around the same time, Roy Irwin of the Fort Worth office of the U.S. Fish & Wildlife Commission, wrote a 19-page letter to EPA after visiting the Carver Terrace site and reviewing EPA documents. Irwin noted serious flaws in EPA's $8-Million study that could have resulted in "an underestimation of the long-term hazards posed by contaminants." [illegible]

[illegible]

what is supposed to protect me and my family?'"

For the health assessment required under Superfund, ATSDR relied largely on EPA data about the extent of the contamination. ATSDR also came to Carver Terrace for a site visit in July 1988, though they didn't really talk to [illegible] people, according to [illegible] The people [illegible] nervous disorders, [illegible] miscarriages, respiratory problems, cancer, heart problems, kidney, liver and skin disorders, and depression. The health agency's 16-page assessment was published on April 10, 1989. But nobody in Carver Terrace [illegible] heard about it.

Almost a year later, on March 23, 1990, local environmentalists called a press conference. Linda James, speaking for the Carver Terrace Community Action Group, called EPA "irresponsible" for not informing the community about the ATSDR report which "proves beyond a doubt... residents of Carver Terrace are being poisoned every day, the year round."[78]

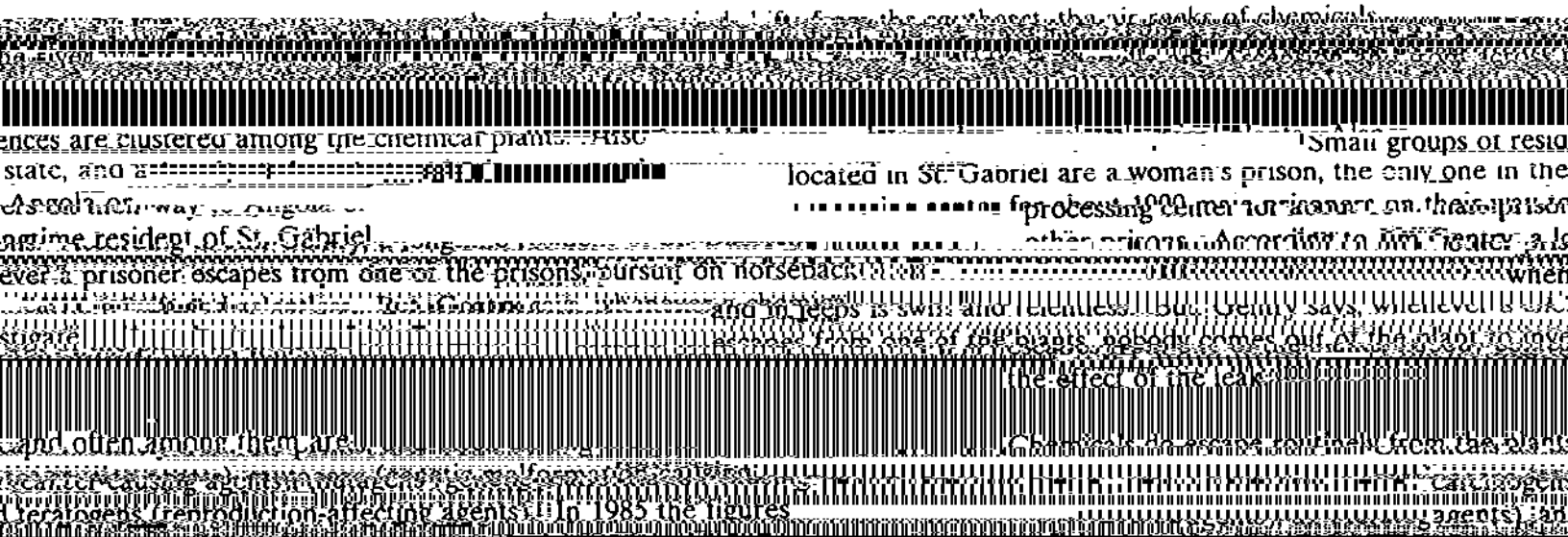
Roger Meacham, the spokesman for EPA's Region VI office in Dallas, responded: "We certainly have not kept this report secret. It has been a matter of public record and available to anyone who requested it since the day of [illegible] publication."[79] This missed the point, however, which was that neither EPA nor ATSDR seemed to have made the slightest effort to let the people of Carver Terrace know what the health assessment contained. Or even that it had been published at all.

According to Meacham, the ATSDR report simply concluded what EPA had been saying all along: that "there is no evidence of imminent or substantial endangerment to citizens in the subdivision."[80] But a close examination of [illegible] revealed otherwise [illegible] these same citizens to long-term exposures to contaminated soils in the residential area pose a potential health risk for [illegible] absorption of soil contaminants," the report summarized. "Ground water beneath the site is contaminated and would pose a potential health risk if used for potable [drinking water] purposes."[81]

The ATSDR assessment told of at least 35 identified on-site contaminants, including cancer-causing dioxins and furans. Some of these, such as pentachlorophenol, were detected in sub-surface soil, groundwater, air and [illegible] surface soil. ATSDR also described [illegible] on-site contaminants of concern [illegible] of them also in more than one medium. Poisons found to be substantially higher than background [illegible] included polynuclear aromatic hydrocarbons (PAHs) [illegible]

substances at concentrations that may result in adverse health effects.

Fields has Sonny Reus has kept a record of the Cancer Terrace since [illegible] since 1985. He has counted 26.



The original protocol specified door to door interviews by trained professionals. That specification was [illegible] in favor of [illegible] volunteers by public notices and [illegible] who were then interviewed over the phone by college students from local campuses. Thus the accuracy of the report was cast in doubt from the beginning. In the words of Jim Gentry, "They [the people of St. Gabriel] are not easily involved." For the miscarriage report to be accurate, one hundred percent community participation was [illegible] necessary. [illegible] investigators also decided to limit their survey to [illegible] 50 [illegible] miscarriages. [illegible]

The advisor to Kay Gaudet and her group was Paul Templet. At the time he [illegible]

... experts sitting there" and [illegible]

community. There were all these federal medical resources that could have been [illegible]

Vicky Arroya has been with the Louisiana Department of Environmental Quality (DEQ) and EPA in Washington, D.C. While in the DEQ she said [illegible] show that you should be concerned for [illegible] higher incidence of cancer around high risk point sources, also spontaneous abortions and miscarriages. To suggest that a study like [illegible] report is necessarily going to have the answer, or to suggest it is inconclusive, that there really isn't a problem, is I think unconscionable when scientifically it hasn't been solved at all."

North Hampton, New Hampshire

"They let us drink this water for ten years [illegible] in there. It's scary because what we've gone [illegible] to be stuck here with no help," says a woman who raised a family for those ten years on Lafayette Terrace in North Hampton, New Hampshire, a street adjacent to the Superfund site known as the Coakley Landfill. Her attitude is typical of the residents of that street, who feel they were neglected and left alone to deal with a catastrophe.

Originally, the Coakley Landfill [illegible] sand and gravel pit; in other words [illegible] before the landfill operation began, the surface layer had been largely scraped away. [illegible] the town of North Hampton applied to the New Hampshire Bureau of Solid Waste for a permit to use the Coakley property as a sanitary landfill. When abutting landowners objected, the town of North Hampton stated the landfill would be for household refuse only.

A woman living on adjacent Lafayette Terrace (who requested anonymity) remembers more than that. [illegible] trucks used to come [illegible] cloak and dagger. I saw them by going up there at night with a friend. The barrels were marked 'corrosive' and had little triangles on them." It wasn't long before the residents of Lafayette Terrace began to notice problems with their water. In 1975 the first complaints [illegible]

the problem was bacterial, they then began boiling their water, thereby

That [illegible] revealed the presence of possible carcinogens in the Lafayette Terrace water. Incredibly, the people most concerned were not officially notified. Instead, Ruth Martin, who had requested the test, was told that she should go around and inform her neighbors. The Water Department, stating that there was "the presence of significant levels of industrial chemicals" in the water, did notify the North Hampton Board of Selectmen. At this time the Water Department also urged the extension of town water to Lafayette Terrace, an order followed to shut down the contaminated wells.

With no water at all, the residents tried to use local schools and fire stations for water sources and for hygienic purposes. They were told that they could [illegible] by paying between $1200 and $1500 per house for a temporary line, but they finally got municipal water.

Soon thereafter, in September of 1983, EPA published a new National Priorities List of hazardous waste sites mandated for cleanup under [illegible]. EPA quickly

these [chronic health] risks would be expected to be very small but not nonexistent." Again, the recipients of the letter were not reassured.

Then in 1988 came two studies that the residents of Lafayette Terrace believed would prove that there was substance to their complaints. One [illegible] the New Hampshire Division of Public Health, surveyed cancer incidence around the Coakley Landfill. The other study was a health assessment of the federal ATSDR, [illegible] were conducted in 1988 and apparently shared information. The ATSDR and New Hampshire reports came to the same conclusions -- no health problems.

[illegible] Martha Bailey [illegible] the cancer study originally suggested by [illegible] member of the National Toxics Campaign Fund Board of Direc[illegible] proving or disproving a causal relationship be[illegible] Hampshire, thus excluding the death of anyone who had gone, for example, to the nearby and renowned medical facilities [illegible] also conducted by the state. Ruth Martin doesn't know what good the survey [illegible] of the ATSDR study [illegible] the residents of Lafayette Terrace [illegible] the federal government comes in North Conway [illegible] Bailey replied, "Since EPA had already declared the site [illegible] would see that their health had been and was at risk [illegible]

Martha Bailey comments: "I'm very disappointed in the state study, and I'm even more disappointed in the fact that ATSDR did not do a full study but instead performed simply an assessment. They haven't gone around and asked people about illnesses in their families, or what was bothering them. The state [illegible] Lillian Wylie went around [illegible] herself and asked her neighbors about their health [illegible] used information that the state gathered.

[illegible] they [illegible] conclude," concludes Martha Bailey.

"This area, southern Rockingham County, has the highest cancer rate in the [illegible]

HOPE, MAINE

Hope, Maine, by Dr. Ray Esposito. Dr. Esposito purchased a part of a land [illegible] from the family of Carolie Larner. In the deed for the five acres purchased [illegible] clause that covenant was eventually broken with a vengeance [illegible] by the new [illegible]

[illegible] by 1960 built a recovery unit for solvents from [illegible] by Dr. Esposito on the [illegible] same site which [illegible] acid [illegible] Chemclean, another company owned and operated [illegible] ed to provide capacity to handle the reclaiming [illegible] recovery unit was soon expand [illegible] other companies in addition to Chemclean. A [illegible] and recycling of solvents from [illegible] built at the site in 1981 to destroy the residuals [illegible] fluidized-bed incinerator was [illegible] the site [illegible] [illegible]

[illegible] was repeatedly [illegible] Beginning in 1979 and continuing for years, Union Chemical [illegible] cited by the Maine Department of Environmental Protection (MDEP) for [illegible] flagrant violations of its several operating licenses. They found parcels of [illegible] hazardous waste, some of them rusted and dented, stacked four high, with the [illegible]

In December of 1979, some of the neighbors, led by Carolie Larner, had forced the town of Hope to hold a public meeting. They wanted to know exactly what was going on at Union Chemical. Why did the air around the plant smell so badly and why had there lately been the construction and use of large boilers? Until this time, the community had believed what they had been told about Union Chemical, that the plant was engaged in the manufacture of paint removers.

At the town meeting, they discovered for the first time that Union Chemical [illegible] recycling its own used paint removers as well as solvents [illegible] paint removers and other hazardous wastes [illegible] That was [illegible] To their surprise they learned that some in the town government were not as ignorant of the activities at Union Chemical as they were. Also present at the meeting was a man named Clifford Goodall, who identified himself as an attorney for EPA. Under questioning from citizens, however, [illegible] former EPA attorney, but was actually in the employ of Kay Esposito, owner of Union Chemical.

[illegible] neighbors decided they had to better organize themselves. Right after Christmas [illegible] "Concerned Citizens of Hope" (CCH). At first CCH worked at the town level. When Union Chemical applied for an incinerator, CCH managed to force the application to a public hearing and initially blocked the permit, though it was later granted.

Frustrated by trying to accomplish anything within the town, CCH moved on

ey would think people who died in nursing homes since these people's deaths would be recorded as not dying from, for instance, by their methods, m
of the nonlethal symptoms they also did not conduct any study
o the release of toxic gases by the death of In coal mines, workers are alerted
the canaries which they bring into the mines. In one Maine mallard ducks
may have served as the equivalent of a canary. One day, Carole Larner
noticed that the incinerator was putting out something strong, which was
cutting pinholes in people's T-shirts and burning their skin. When she
returned home she found that seven of her young mallard
cks and their mother were dead. One of the ducks was sent to lab for an autopsy, the lab
mother were all dead. One of the ducks was sent to lab for an autopsy, the lab
listed "poisoning" as cause of death. The lab tested the ducks feed and found
no contamination there. On another instance, a sheep died in the same sudden
manner.

ATSDR officials seemed initially interested in the situation with the ducks, but
due to Union Chemical. They said that if the citizens wanted to prove that
ens should themselves get the deaths were due to Union Chemical, the citiz
ical exposure. veterinarians to certify each death as due to chem
unreliable. They sounded responsive when they first came to town, taking
other information. They also threats were being made against people who
spoke up.
ing to Larner the agency Yet, when the ATSDR reports came out, accord

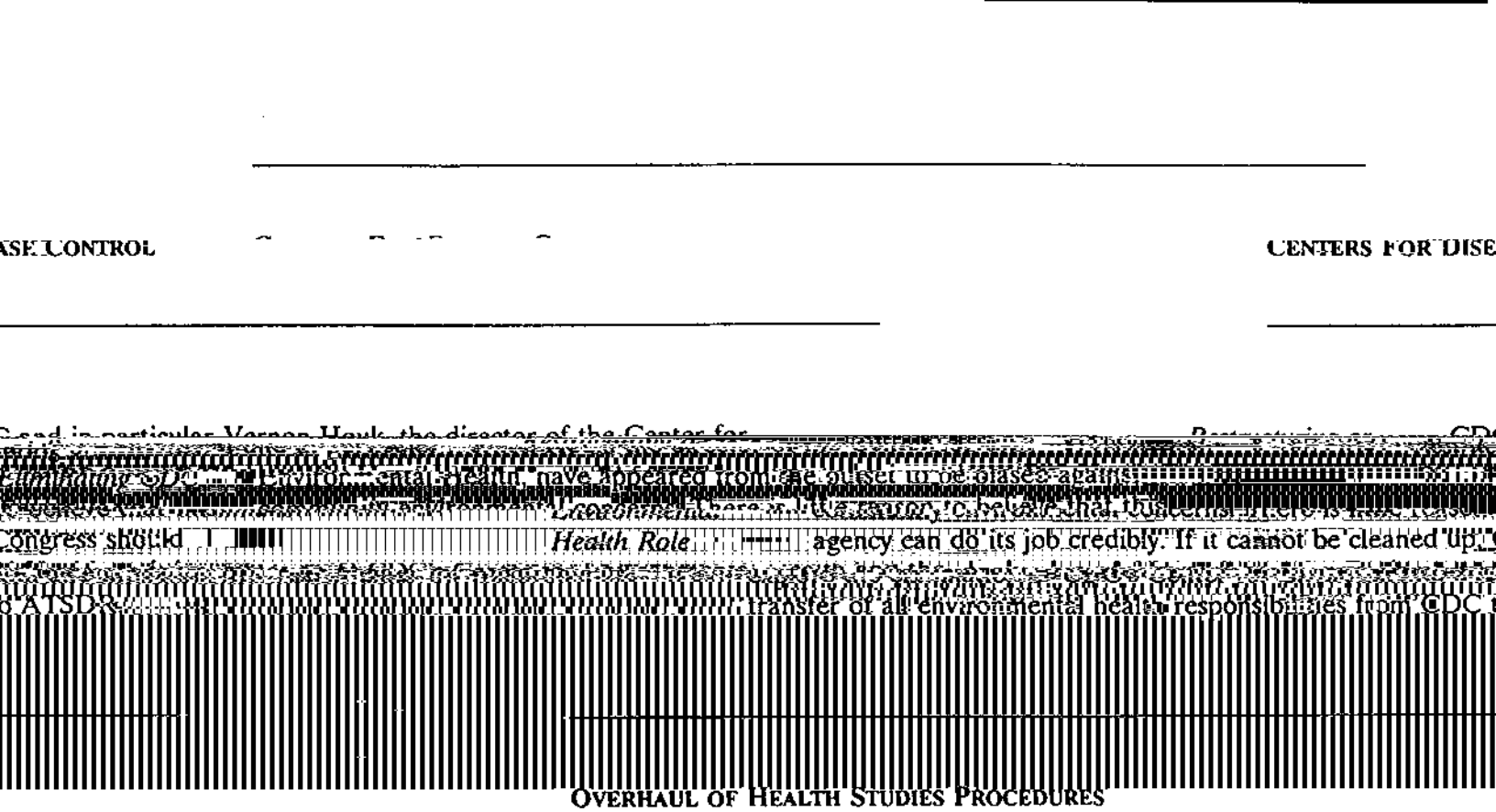
Conclusions and Recommendations

environmental health programs, we have identified extensive deficiencies in the way these programs are conducted. There have been drastic deficiencies in agency structure and leadership, in responsiveness to local communities, and in the manner in which public health investigations are conducted. Our recommendations to remedy these continuing deficiencies are set forth below.

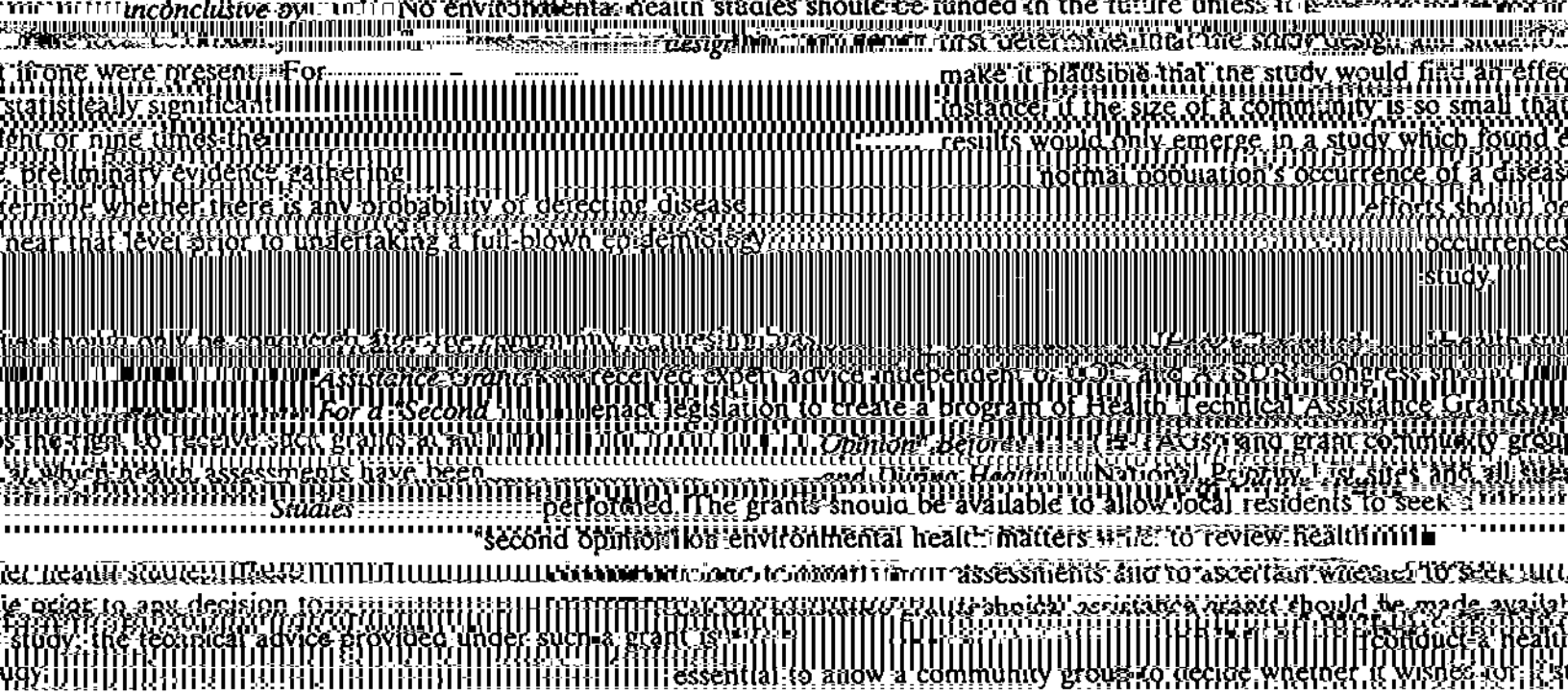
The federal government's environmental health agencies were established to aid communities at risk. But instead of serving the people for whom they were created, the agencies have been virtually throwing away millions of dollars on research studies and assessments which inconclusive findings are entirely predictable even before the studies are implemented.

These predictably meaningless studies have become the bane of many communities where serious, cancer-related health epidemics are suffered or threatened. Instead of aiding precautionary action to prevent contamination and exposure, they have increased the suffering and delay numerous communities.

Despite the dreadful record of our national environmental health agencies, there remains a pressing demand for a genuinely helpful science of



Overhaul of Health Studies Procedures



[redacted]

Overhaul of Health Assessments Procedures

ATSDR's health assessment process must be overhauled. Legislation should specify:

1) The kinds of data required for a health assessment. The law should require ATSDR officials to speak with people residing in the community that is being assessed, and to secure all available public health and environmental data whenever that would be appropriate in view of the types of releases

2) The uses of health assessments: A health as
review of available data regarding a site,
of such assessments should be limited to
exposure and determining whether the
current or future exposure to hazardo
immediate measures such as relocatio
alternative water supplies which shoul
advising residents as to possible medi
providing information which can be utilized by

potential emergency circumstances which may spread hazardous
substances, such a
and prescribing m
contrasted, the law sh
utilized as the final word on whether a site presents a health threat to
the community, not to restrict the scope of remedial measures.

The law should provide that at RCRA sites a health assessment must be conducted by ATSDR if citi
petition the agency to conduct such

Health Assessments at RCRA Sites

Environmental Health Literacy

ATSDR should
and exposed communities. Congress should establish a second
environmental health training program to be funded by ATS
conducted by universities and environm
The purpose of the trainings should
hazards presented by hazardous subs
and state programs relating to hazardous wastes sites and the potenti

limitations of health assessments and studies.

Federal legislation should require that all medical and public health students complete at least one course in environmental [illegible] education [illegible]

[illegible] ATSDR chemical profiles should provide complete listings of all health [illegible] *Chemical Profiles* for which any reputable studies have indicated to be caused by the named [illegible]

[illegible] *Faculty Sitting* [illegible] agency from involvement in appraisal of the safety of proposed facilities such [illegible] as waste management [illegible] *Data Relations* [illegible] authority mandate [illegible] their existing power to recommend action by EPA or local health [illegible] release or take other [illegible] course [illegible] When ATSDR makes a recommendation to EPA there should be a mandated time frame within which EPA must [illegible] or put in place [illegible] procedures should [illegible] record of follow-up on ATSDR recommendations [illegible]

The ATSDR budget for [illegible] should be at least double current spending – i.e. $100 million instead of the current $50 million. This should include an initial allotment of $10 million for the health technical assistance [illegible] grants and $5 million for a community training program. The registry segment [illegible] of ATSDR should also be expanded budgetarily.

Citizens Advisory Panel

ATSDR should immediately create a citizens' advisory board to provide accountability to the grassroots. Some elements of such accountability would include: hearings in or presentations by people from the communities affected; their own experts [illegible] having peer review panel advise citizens [illegible] giving the board

Revisiting Past ATSDR should thoroughly revisit all health assessments and health studies

Assessments and Studies

ATSDR Officials Should Conduct Meetings With Communities Studied In This Report

Administrator Barry Johnson should meet with [illegible] representatives of the communities studied in this report to discuss the [illegible] concerns raised and responsive actions that the agency will take to address them.

Congress should conduct hearings regarding [illegible] ATSDR's current performance [illegible]

- Examination of the reason why ATSDR and CDC continue to engage in health studies which are inconclusive by design.
- [illegible] EPA-ATSDR relationship in general and specifically in relation to Uniontown, Ohio Superfund site.
- [illegible] the need for ATSDR to revisit health assessments and studies conducted during 1990.
- Biases displayed by CDC and Vernon Houk, including the admitted manipulation of data regarding Agent Orange by Dr. Houk in previo[illegible] Congress and his current attempts to deregulate [illegible] as well as an overall inquiry into the issue of dioxin [illegible] dioxin exposures, a[illegible] deregulation.
- Other issues as raised by local [illegible] testify and present all of the recommen[illegible] dations contained in this report.

[illegible] recommendations contained in [illegible] legislation should be drafted to embody the [illegible] this report and to address other issues raised in the hearings.

In addition to the specific problems identified at the environmental health agencies, we have identified patterns that are common to many environmentally impacted communities. These patterns most often begin with poverty and unemployment accompanied by indiscriminate toxic chemical [illegible] prevention, liability [illegible] and health care are needed to correct the fundamental [illegible] we have observed.

Pollution Prevention

A national shift toward pollution prevention is needed to reduce the use of toxic chemicals and the generation of the toxic wastes. Some chemicals which [illegible] should be banned; the usage of others should be curtailed to the extent [illegible] by each industry [illegible]. National legislation [illegible] the national solid waste law, the Resource Conservation and Recovery Act, can help [illegible] and exposure of local populations, thereby end the cycle of waste production [illegible]

More money is spent by families each year on health care than anything else other than basic living expenses. More money is spent by businesses in [illegible] work time by employees for health purposes, and for health insurance than [illegible] any other employee related expenses. Establishing a national pollution prevention strategy would [illegible] a financial return into our national economy by [illegible] health related costs [illegible]

Reform Worker and Neighbor Compensation Systems

Worker compensation and disability laws, as well as liability laws applicable to [illegible] and victims. Many workers whose [illegible] health is harmed through exposure to chemicals in the workplace find that they are without recourse, due to the long latency periods from the time of exposure to the onset of diseases. Neighbors of pollution sources often find it economically and technically impossible to bring suits due to the high costs [illegible] evidence and the over-reliance by many courts on epidemiological studies. As this report has documented, such studies, by their statistical nature, are unlikely to produce conclusive results at waste sites.

Some policy experts and public health professionals have suggested that [illegible]

releases; or (b) Establishing a right to medical care for people whose diseases are likely to be due to the chemicals to which they were exposed. The presence of exposures to certain chemicals, combined with contracting of diseases which are closely linked to exposure would trigger the right to care. Examples might include ensuring treatment for bladder cancer for people

ohthylamine, and for birth defects or leukemia where there

chlorbethylene." Such proposals should be developed

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was exposure to tr
further by Congre

Millions of Americans have no health insurance or access to regular health

care. Toxic exposures tend to be the worst in lower income communities,

where the need for such resources is most acute. In many of the communities

Footnotes

1. [illegible] Hazardous Wastes, National Academy Press, 1991, p. 21.

2. Barnaby J. Feder, "In the Clutches of the Superfund Mess," New York Times, June [illegible]6, 1991 sec. 3, pp. 1,6.

3. Keith Schneider, "Toxic Pollution Shows Drop in '89," New York Times, May 17, 19[illegible]1, p. A32.

4. Hirschhorn, Joel, and Kirstin Oldenburg, Prosperity Without Pollution, Van Nostrand Reinhold, 1991.

5. Peter Montague, "Earthly Necessities: A New Environmentalism for the 1990's," The Workbook, Vol. 16, No. 2, Summer 1991, P. 58.

6. The Workbook, ibid, P. 59.

7. See generally, National Research Council, Environmental Epidemiology: Public Health and Hazardous Wastes, National Academy Press, 1991.

8. [illegible] "Geographic Patterns of Lung Cancer: Industrial Correlations," American [illegible] of Epidem., Vol. 103 (1976) pp. 539-550, cited in Hazardous Waste News, #274, Feb. 26, 1992.

9. It is essential, in order to prevent our population from being treated as "guinea pigs," to include consideration of the results of tests on animals in appraising the potential effect on human health. While a few scientists, most of whom consult for polluting industries, have attempted to challenge the relevance of animal studies to human exposure situations, the majority of public health professionals continue to assert that animal studies are one of the most viable means of determining which [illegible] substances are harmful to humans. For instance, see National Research Council, id. at 46, [illegible] that "all 52 compounds known to cause cancer in humans also produce it in animals.") and Strauss and [illegible] M., Epidemiology and Toxic Torts [illegible] Animal Studies Yield Valid Insights, Trial, April 1991, p. 60.

10. Roger R. Arnetz, "Mortality among [illegible] [illegible] Health, Vol. 46 (July/Aug. 1991) pp. 237-248, cited in Hazardous Waste News No. 273, Feb. 19, 1992.

11. U.S. National Cancer Institute, Cancer Statistics Review, NIH Pub. #90-2789.

12. The Workbook, ibid, P. 60.

13. Office of Technology Assessment report BA-266, December 1985, pp. 34[illegible]2 and 346.

14. Office of Technology Assessment, report BA-436, pp. 55 and 272.

15. New York Times, July 16, 1991, Letter from Samuel S. Epstein M.D. And Ralph W. Moss [illegible]

20. Citizen's Clearinghouse for Hazardous Wastes, Center for Disease Control: Cover Up, Deceit and Confusion," 1985, p. 9.

21. R.E. Hoffman, et al. 1986, "Health effects of long-term exposure to 2,3,7,8-tetrachloro-p-dioxin," JAMA, 255, 2031-2038.

22. Author's interview with Dr. Marge Brewster, director of Arkansas Children's Hospital metabolic laboratory, 1988.

23. Interview with the author, [illegible]

24. Time Magazine, July 23, 1990.

25. Ibid.

26. Kogan, M.D. and R.W. Clapp, "Soft tissue sarcoma mortality among Vietnam Veter[illegible]

27. Associated Press article, May 25, 1991.

28. Keith Schneider, "U.S. Officials Say Dangers of Dioxin Were Exaggerated," New York Times, August 15, 1991, pp. A D23.

29. Richard Clapp, Summary of interview [illegible]

30. Philip J. Hilts, "White House Shuns Key Role on Lead Exposure," New York Times, August 28, 1991, p. [illegible]

[illegible] assessments are defined as "preliminary assessments of the potential [illegible] to human health posed by individual sites [illegible] water contamination, air emissions, and food chain contamination.) the size and [illegible] of exposed human exposure [illegible] potential susceptibility of the [illegible] hazardous substances, and the comparison of existing [illegible] recommended exposure or tolerance limits [illegible] levels of exposure." 42 U.S.C. sec. 9604 (i)(6)(F)(i) [illegible]

32. Ibid.

[illegible] Office, Superfund Public Health Assessments Incomplete and of Questionable Value, August 1991.

33. General Accou[illegible]

35. EHN interview with ATSDR's Barry Johnson, May 1991.

[illegible] assessment reports [illegible]

[illegible] Sikorski, "Employee Health and Safety at Federal Hazardous Waste Sites," Statement, House Civil Service [illegible] mittee, September 18, 1990.

37. Gerr[illegible] Subcomm[illegible]

[illegible]or's interview with Dr. Paigen, April 22, 1991.

38. Auth[illegible]

[illegible]ors' interview with Dr. Richard Bird, Jr., internal medicine resident, Boston City Hospital, former director of [illegible]usetts Source Reduction Program, March 1991.

39. Auth[illegible] Massach[illegible]

[illegible] Citizen's Clearinghouse report on CDC, pp. 4-5.

40. 1985

[illegible]or's interview with Dr. Clapp, March 1991.

41. Aut[illegible]

42. Authors' interview with Stephen Lester, Citizen's Clearinghouse for Hazardous Wastes, March 1991.

43. Author's interview with Dr. Ozonoff, March 1991.

44. ATSDR response to Environmental Health Network.

45. Authors' interview with Henry Cole, Clean Water Action Project, March 1991.

59. Author's interview with Dr. Richard Clapp, March 1991.

60. NRC, Ibid., p. 20.

61. Ibid., p. 20.

62. Interview with Linda King, Environmental Health Network, and

63. ATSDR Health Assessment for Koppe

64. Buzzworm Magazine, Sept./Oct, 1991.

65. Authors' interview with

National Toxics Campaign Fund.

67. Bird report.

68. Authors' interviews with North Hampton residents, March 1991.

70. Consider the case of Calvert City, Kentucky: After reviewing available data, the March 7, 1991, health assessment,

74. EPA Superfund Project Update, Koppers Texarkana Site, April 1990.

75. EPA Superfund Project Update, Koppers Texarkana Site, April 1990.

76. Author's interview with Mr. Fields, May 23, 1991.

77. EPA Superfund Project Update, Koppers Texarkana Site, April 1990.

78. "Environmentalists Blast EPA," Texarkana Gazette, March 24, 1990, pp.1A, 10A.

79. Ibid.Emphasis added.

80. Ibid.

ent for Koppers Company, Inc., National Priorities List (NPL) Site, Texarkana, Texas.

8.1 ATSDR Health Assess