

RICHMOND, CALIFORNIA, January 26, 2021

The Richmond City Council Evening Open Session was called to order at 4:45 p.m. by Mayor Thomas K. Butt via teleconference.

Due to the coronavirus (COVID-19) pandemic, Contra Costa County and Governor Gavin Newsom issued multiple orders requiring sheltering in place, social distancing, and reduction of person-to-person contact. Accordingly, Governor Gavin Newsom issued executive orders that allowed cities to hold public meetings via teleconferencing (Executive Order N-29-20).

DUE TO THE SHELTER IN PLACE ORDERS, attendance at the City of Richmond City Council meeting was limited to Councilmembers, essential City of Richmond staff, and members of the news media. Public comment was confined to items appearing on the agenda and was limited to the methods provided below. Consistent with Executive Order N-29-20, this meeting utilized teleconferencing only. The following provides information on how the public participated in the meeting.

The public was able to view the meeting from home on KCRT Comcast Channel 28 or AT&T Uverse Channel 99 and livestream online at <http://www.ci.richmond.ca.us/3178/KCRT-Live>.

*Written public comments were received via email to cityclerkdept@ci.richmond.ca.us. Comments received by 1:00 p.m. on January 26, 2021, were summarized at the meeting, put into the record, and considered before Council action. Comments received via email after 1:00 p.m. and up until the public comment period on the relevant agenda item closed, were put into the record. Public comments were also received via teleconference during the meeting. **Attached herewith all written public comments received.***

ROLL CALL

Present: Councilmembers Claudia Jimenez, Eduardo Martinez, Demnlus Johnson III, Gayle McLaughlin, Vice Mayor Nathaniel Bates, and Mayor Thomas K. Butt. **Absent:** Councilmember Melvin Willis arrived after the roll was called.

PUBLIC COMMENT

The city clerk announced the public comment procedures and that the purpose of the Open Session was for the City Council to hear public comments on the following items to be discussed in Closed Session:

CITY COUNCIL

CONFERENCE WITH LEGAL COUNSEL -
ANTICIPATED LITIGATION (initiation of litigation pursuant to paragraph (4) of Subdivision (d) of Government Code Section 54956.9):

One case

CONFERENCE WITH LEGAL COUNSEL - EXISTING LITIGATION (paragraph (1) of Subdivision [d] of Government Code Section 54956.9):

San Francisco Baykeeper and West County Toxics Coalition v. City of Richmond

Richmond Shoreline Alliance et al. v. City of Richmond

The following individuals gave comments via teleconference regarding the Richmond Shoreline Alliance et al. v. City of Richmond case: Hari Lamba, Franco DeMarinis, Deborah Bayer, Jeanne Kortz, Sara Theiss, Sherry Padgett, Tarnel Abbott, Sally Tobin, Janet Johnson, Faris Jessa, Margaret Childs, and Doria Mueller-Beilschmidt.

The Open Session adjourned to Closed Session at 5:10 p.m. Closed Session adjourned at 7:40 p.m.

The Regular Meeting of the Richmond City Council was called to order at 7:43 p.m. by Mayor Butt via teleconference.

ROLL CALL

Present: Councilmembers Jimenez, Johnson, Martinez, McLaughlin, Willis, Vice Mayor Bates, and Mayor Butt. **Absent:** None.

STATEMENT OF CONFLICT OF INTEREST

None.

AGENDA REVIEW

Item G-2 was removed from the Consent Calendar for discussion immediately following the approval of the Consent Calendar.

The city clerk announced the public comment procedures published on the agenda.

REPORT FROM THE CITY ATTORNEY OF FINAL DECISIONS MADE DURING CLOSED SESSION

City Attorney Theresa Stricker stated there were no final actions to report.

REPORT FROM THE CITY MANAGER

City Manager Laura Snideman reported that the City of Richmond was working with Contra Costa County to offer COVID-19 vaccinations in the Richmond Memorial Auditorium. Ms. Snideman advised that vaccination supplies were limited and would not be available for everyone for many months. Ms. Snideman announced that the Ohlone shell mounds art installation project was completed in the Marina Bay Neighborhood.

OPEN FORUM FOR PUBLIC COMMENT

The following individuals gave comments via teleconference:

Pam Stello and Tarnel Abbott gave comments regarding Astra-Zeneca and opposition to the proposed development at the Richmond Campus Bay site. Ms. Abbott read a public comment regarding toxic chemicals submitted by Gayle Windham at the December 1, 2020, City Council meeting.

Andromeda Brooks gave comments in support of the Happy Lot Farm and Garden located at 1 45th Street in Richmond, discussed at the December 22, 2020, City Council meeting. Ms. Brooks requested that the site remained open space and the request for proposals issued in 2012 remained in place. Ms. Brooks also requested an opportunity to return to the Council with support petitions and evidence of stewardship.

William McGee invited the Council and Richmond residents to Black History events being hosted by the West Contra Costa Unified School District via teleconferencing during February 2021.

Eduardo Martinez raised concerns regarding item G-4 and the proposed grant funding allocations in the staff report.

CITY COUNCIL CONSENT CALENDAR

On motion of Councilmember Willis, seconded by Councilmember Johnson, the items marked with an (*) were approved by the following vote: **Ayes:** Councilmembers Jimenez, Johnson, Martinez, McLaughlin, Willis, Vice Mayor Bates, and Mayor Butt. **Noes:** None. **Absent:** None. **Abstained:** None.

***G-1.** Approved an appointment to the Design Review Board: appointed Michelle Hook, new appointment, seat #1, filling an unexpired term with an expiration date of March 17, 2021.

G-2. The matter to approve an appointment to the Rent Board: appoint Ayoka Medlock-Nurse, new appointment, seat #4, filling an unexpired term with an expiration date of March 21, 2021, was removed from the Consent Calendar for discussion. Discussion ensued. The Council recommended that it was essential to have tenant representation on the Rent Board and appointees that supported rent control. A motion to approve said appointment was made by Vice Mayor Bates, seconded by Mayor Butt. Randy Joseph and Edith Pastrano gave comments. Further discussion ensued. The motion failed by the following vote: **Ayes:** Vice Mayor Bates and Mayor Butt. **Noes:** Councilmember Jimenez. **Absent:** None. **Abstained:** Councilmembers Johnson, Martinez, McLaughlin, and Willis.

***G-3.** Approved an appointment to the Planning Commission: appointed Jonathan Harrison, new appointment, seat #1, filling an unexpired term with an expiration date of June 30, 2022.

***G-4.** Adopted **Resolution No. 5-21** authorizing the submittal of a Proposition 64 Public Health and Safety program grant application and authorizing the city manager to execute a grant agreement with the Board of State and Community Corrections, if grant funds are awarded.

STUDY AND ACTION SESSION

H-1. The matter to receive a report on the City's Comprehensive Annual Financial Report (CAFR) for Fiscal Year 2019-20 was introduced by Finance Director Belinda Brown. Ahmed Badawi of Badawi Associates presented a Powerpoint that highlighted the following: engagement team; deliverables and scope; primary emphasis; auditors report and financial statements; general fund; pension and post-employment benefits (OPEB) plans; required communications; and new accounting standards. Discussion ensued. The Council requested the following: entire OPEB actuary report; the number of years the City of Richmond used the current actuary firm to estimate the OPEB liability assumptions and what factors changed the assumptions in the actuaries; the cost of the swap investments termination and refinance fees; funds lost on all swaps and brokers; hold a future study session regarding swap investments; and for the auditor to determine if any contracts over \$10,000 in the fiscal year 2020-21 were executed without the Council's approval. The following individuals gave comments via teleconference: Yen Do, Sean Stalbaum, Randy Joseph, Gabriel Haaland, and Ben Therriault. Further discussion ensued. A motion was made by Councilmember Martinez, seconded by Councilmember Willis to receive said CAFR. Further discussion ensued. The Council requested at its future study session regarding this matter, an explanation of how the City of Richmond entered in its swap negotiations, and to receive communications that were shared in the making of the swap negotiations. The motion passed by the unanimous vote of the City Council.

H-2. The matter to adopt a resolution in support of Assembly Bill 15 (Chiu) to extend certain eviction protections from the COVID-19 Tenant Relief Act of 2020 through December 31, 2021, and Assembly Bill 16 (Chiu) which establishes a fund and framework for the distribution of financial support for renters, small landlords, and affordable housing providers was introduced by Councilmembers Jimenez and Willis. The following individuals gave comments via teleconference: Yen Do, Gabriel Haaland, and Javier Vasquez. On motion of Councilmember Willis, seconded by Councilmember Jimenez, adopted **Resolution No. 6-21** by the unanimous vote of the City Council.

H-3. Mayor Butt announced that recent resignations from City of Richmond boards, commissions, and committees; and vacancies as of January 20, 2021, were listed in the staff report packet. Mayor Butt asked that interested individuals send applications to the city clerk.

REPORTS OF OFFICERS: REFERRALS TO STAFF, AND GENERAL REPORTS (INCLUDING AB 1234 REPORTS)

Vice Mayor Bates expressed his appreciation to Mayor Butt for his comments congratulating Fire Chief Adrian Sheppard on his new position in Redmond, Washington. Vice Mayor Bates wished Chief Sheppard success on his new venture.

ADJOURNMENT

There being no further business, the meeting adjourned at 10:31 p.m., in memory of Delores Medlock and Henry Louis (Hank) Aaron, to meet again on Tuesday, February 2, 2021, at 6:30 p.m.

Clerk of the City of Richmond

(SEAL)

Approved:

Mayor

From: [Alan Carlton](#)
To: [City Clerk Dept](#)
Subject: Public Comments – Open Session prior to Closed Session
Date: Monday, January 25, 2021 5:59:28 PM

There should be no development until the site is entirely cleaned up; housing cannot be built on polluted sites which would be a danger to all residents.

Alan Carlton
408 Sunset Rd.
Alameda CA 94501
(510) 759-5387

From: [Audrey Faine](#)
To: [City Clerk Dept](#)
Cc: [Laura Snideman](#); [Tom Butt - external](#); richcityservant@gmail.com; [Melvin Willis](#); [Claudia Jimenez](#); [Gayle McLaughlin](#); [Demnlus Johnson](#)
Subject: Public Comments – Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 10:10:01 AM

Hello,

I hereby demand that all the toxic soil currently on the Zeneca site be removed before building up to 4,000 Campus Bay condos on top of the site, a US EPA Superfund-qualified site! Otherwise not only will the construction workers risk the health of themselves and their families, but all future residents will be at risk as well.

The Zeneca site on the Richmond southeast shoreline has been leaking highly contaminated water and vapors for decades, from the 550,000 cubic yards of hazardous material left behind after 100-years of chemical manufacturing on this shoreline site. Despite the known risks of sea level rise, liquefaction (which is more likely as sea level rise progresses), and health risks should any of the proposed “remedies” fail, the small majority of lame duck City Council members approved pouring concrete over most of the 86-acre site (but doing nothing about the toxics flowing underground onto neighboring properties and into the Bay), with up to 4,000 multi-story condos to be built on top of the mess.

The outgoing council gave no consideration to updated sea level rise data available from the San Francisco Bay Conservation and Development Commission (BCDC). They also failed to heed Cal EPA’s more health-protective vapor intrusion standards announced on February 14, 2020, which apply to the most dangerous and widespread contaminants on this site. In addition, the lame duck council members blatantly and arrogantly ignored the residential and business community’s near-unanimous 15-plus years of requests for a full and complete cleanup of this site before any person begins working or living on this site. The City’s extremely cumbersome and poorly executed public participation tools through Zoom have also called into question the City’s intent regarding public participation during this unprecedented COVID pandemic.

I ask the new council members to fight for a health-protective review, and reversal, of those poor decisions.

Thank you.
Audrey Faine
El Cerrito, CA
510-207-2002

From: [bridget](#)
To: [City Clerk Dept](#)
Subject: Public Comments - Open session prior to closed session
Date: Tuesday, January 26, 2021 11:00:43 AM

Deare Council Member,

It is true, I have done some copy and pasting but I am in agreement with this entire email and I could not express the opinions better myself.

I live in Marina Bay and am very concerned with the irresponsibility of this project. All the toxic soil currently on site MUST be removed before building up to 4,000 Campus Bay condos on top of the Zeneca site, a US EPA Superfund-qualified site! Otherwise not only will the construction workers risk the health of themselves and their families, but all future residents will be at risk as well.

Please read and take note and do the right thing.

Thank you so much!!

~ bridget scadeng

The Zeneca site on the Richmond southeast shoreline has been leaking highly contaminated water and vapors for decades, from the 550,000 cubic yards of hazardous material left behind after 100-years of chemical manufacturing on this shoreline site. Despite the known risks of sea level rise, liquefaction (which is more likely as sea level rise progresses), and health risks should any of the proposed "remedies" fail, the small majority of lame duck City Council members approved pouring concrete over most of the 86-acre site (but doing nothing about the toxics flowing underground onto neighboring properties and into the Bay), with up to 4,000 multi-story condos to be built on top of the mess.

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The community objected so strongly to the City's railroading of this bad proposal, that in November a new City Council majority was voted in, who support working with the highly engaged community. However despite many requests that all remaining decisions be held until the new council was seated, the lame duck council members still pushed through additional decisions regarding the Campus Bay/Zeneca development proposal in December. Due to the gross judgement errors by those few council members, a lawsuit was filed on December 30, 2020 against the City of Richmond. Now your support is needed to help the new council members fight for a health-protective review, and reversal, of all those bad decisions.

Dear Mayor Butt and Members of the Richmond City Council:

Re: 01-26-2021 City Council Closed Session Agenda Item re: the ZENECA SITE / CAMPUS BAY PROPOSAL

I support those City Council members proposing a review of the November and December 2020 decisions regarding the Zeneca site / Campus Bay project, and for legal negotiations to bear this request in mind. The electorate has more than made it clear they want a different tack taken by the City Council on this project. This should be no surprise to you as all the meetings regarding this Campus Bay Project, both those held by the City Council as well as DTSC, have all been standing-room only meetings for the past 15 years. Moving this project forward against the very strong objections of the electorate is reckless to the worst degree.

I am a Richmond resident and homeowner, living here for 30+ years. I live less than a mile from this site, and as it is a major Richmond Gateway site, I am often near it or traveling through it, via the public areas adjacent to it. Because of this, for the past 15 years I have closely followed the DTSC and CDPH information regarding the Campus Bay, specifically the Stauffer Chemical Manufacturing site, aka the Zeneca site. Given the hundred years of heavy industrial use of this site, with military site levels of over a hundred TYPES of toxic compounds that include confirmed radioactive material as well as extremely high volumes of carcinogens and other toxics such as Arsenic, PCBs, lead, and banned pesticides and fungicides. This is NOT a site to sweep the problems under a concrete cap and then build upon it as if there is no risk to residents or visitors, or to the immediately adjacent San Francisco Bay and the documented endangered wildlife that Stege Marsh supports. DTSC staff have confirmed toxics from this site are already migrating offsite via underground seeps, contaminating both adjacent properties as well as Stege Marsh and the adjacent Bay areas. There has been NO geotechnical report to prove a concrete cap will even be a reliable solution as a cap at this location. In addition there hasn't been any long term (15-20-30 year) studies proving that concrete caps can be relied upon even in general, to withstand seismic movement to underlying soft Bay/shoreline soil; remember the photos of the San Francisco Marina District, then think what would be the situation at THIS site after a large earthquake which is considered overdue by many experts.

Moving the current proposal forward before completion of a full remediation of the site is ill-advised, full of hubris, and reckless. It leaves the City finances, and those of its taxpayers, at risk from a catastrophic failure of the proposed development. At this time it isn't even possible to quantify the worst case of the risk as no seismic evaluation of this project has been completed. In addition, financial risk is all the more likely as NO financial information or analysis whatsoever has been provided to you or your staff.

In addition, not only WHEN (not IF) the toxics cause harm to the eventual homeowners, Zeneca, Shopoff, HilCo, and any other developer involved, and the City of Richmond), will be liable, as all have been complicit in moving this project forward up to this point, over the strong objections of the City taxpayers. And keep in mind that litigation is ongoing against the current developer, Shopoff*. This is how it played out in Oakland with Shell Oil and their developer(s) for the Oakland Estuary Condos site, where the contaminants involved were much less complex and at much lower volumes.

I urge the City, now and tonight, to enter negotiations for the purpose of following the clear direction of your citizens over the past 15+ years, to support the complete and full removal of the Zeneca site toxics **PRIOR to any development on site.**

Sincerely,
Carolyn Graves
Richmond resident and homeowner

*<https://www.ocregister.com/2020/05/22/shopoff-realty-cleared-of-defrauding-investors/>

From: [Daphne Tooke](#)
To: [City Clerk Dept](#)
Cc: [Laura Snideman](#); [Tom Butt - external](#); richcityservant@gmail.com; [Melvin Willis](#); [Claudia Jimenez](#); [Gayle McLaughlin](#); [Demnlus Johnson](#)
Subject: Public Comments – Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 12:18:48 PM

Dear Council Members, with respect,

The Zeneca site on the Richmond southeast shoreline has been leaking highly contaminated water and vapors for decades, from the 550,000 cubic yards of hazardous material left behind after 100-years of chemical manufacturing on this shoreline site. Despite the known risks of sea level rise, liquefaction (which is more likely as sea level rise progresses), and health risks should any of the proposed “remedies” fail, the small majority of lame duck City Council members approved pouring concrete over most of the 86-acre site (but doing nothing about the toxics flowing underground onto neighboring properties and into the Bay), with up to 4,000 multi-story condos to be built on top of the mess.

The outgoing council gave no consideration to updated sea level rise data available from the San Francisco Bay Conservation and Development Commission (BCDC). They also failed to heed Cal EPA's more health-protective vapor intrusion standards announced on February 14, 2020, which apply to the most dangerous and widespread contaminants on this site. In addition, the lame duck council members blatantly and arrogantly ignored the residential and business community's near-unanimous 15-plus years of requests for a full and complete cleanup of this site before any person begins working or living on this site. The City's extremely cumbersome and poorly executed public participation tools through Zoom have also called into question the City's intent regarding public participation during this unprecedented COVID pandemic.

The community objected so strongly to the City's railroading of this bad proposal, that in November a new City Council majority was voted in, who support working with the highly engaged community. However despite many requests that all remaining decisions be held until the new council was seated, the lame duck council members still pushed through additional decisions regarding the Campus Bay/Zeneca development proposal in December. Due to the gross judgement errors by those few council members, a lawsuit was filed on December 30, 2020 against the City of Richmond. Now your support is needed to help the new council members fight for a health-protective review, and reversal, of all those bad decisions.

It's IMPERATIVE that all the toxic soil currently on site be removed before building up to 4,000 Campus Bay condos on top of the Zeneca site, a US EPA Superfund-qualified site! Otherwise not only will the construction workers risk the health of themselves and their families, but all future residents will be at risk as well.

With appreciation for your attention to this critical environmental and public health matter.

Daphne Tooke
176 Bayside Court
Richmond CA 94804

From: [David Kafton](#)
To: [City Clerk Dept](#)
Cc: [David Kafton](#)
Subject: Public comments – Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 12:57:04 PM

Dear Councilpersons, City Manager, & City Attorney,

I am David Kafton, resident of Marina Bay and Owner/Broker of Kafton Real Estate. I am also a member of the Richmond Shoreline Alliance.

I urge you to focus yours and City staff's attention on cancelling as soon as possible the Development Agreement between Shopoff Realty and the City of Richmond.

Thank you very much for all you do.

All the best,

David

David Kafton, Ph.D.
Owner/Real Estate Broker
Kafton Real Estate
david@kaftonrealestate.com
davidkafton@gmail.com
www.kaftonrealestate.com
510.717.9265

From: [Doria Mueller-Beilschmidt](#)
To: [Laura Snideman](#); [Tom Butt - external](#); [Eduardo Martinez](#); richcityservant@gmail.com; [Melvin Willis](#); [City Clerk Dept](#); [Demnlus Johnson](#); [Gayle McLaughlin](#); jiminez_claudia@ci.richmond.ca.us; [Trina Jackson](#)
Subject: Public Comments – Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 1:10:03 PM
Attachments: [20051216-2006-p-00007.pdf](#)
[EPA Completes Record Number of Superfund Cleanups through Lean Management.eml.msg](#)

Dear Mayor, 2021 City Council Members, City Clerk and Staff,

Please take seriously and act on the scholarly and incredibly well research which has been repeatedly presented to the City Council in 2020 and now in 2021 by the Richmond Shoreline Alliance, Citizens for East Shore Parks and many other concerned Richmond and Bay Area residents regarding the approved development of the Campus Bay/Astra Zeneca site.

The Richmond City Council's rushed approval--during the Holiday months, 10 months into a Pandemic--of a dense development on top of the century-long severely chemically abused land of the Zeneca/UC Campus Site, located on the Richmond Shoreline on Landfill and threatened by Sea Level rise, **is wrong**.

The cleanup, i.e., remediation of this site by Astra-Zeneca, should be fully completed, then tested and monitored over several years for effectiveness, thoroughness (with clean margins, like cancer) long BEFORE any development of the site should be considered.

The rushed approval is shameful, though sadly it falls in line with the Trump Administration's EPA actions regarding the fast forward treatment of Superfund Sites and the blatant disregard for the health and wellbeing of humans and the environment well into the future where we will all struggle to understand and deal with the overlying effects of Global Warming, in this case especially Sea Level Rise. (see attached EPA file below).

If the Pandemic of 2020 has taught us something, it has brought us to a new understanding of collective responsibility towards safeguarding eachother's health.

I lost my job, as did millions of others, because my place of employment (the Downtown Berkeley Y) was closed early this year, as were thousands of other businesses, due to the Pandemic. Since March, we all wear masks and resist socializing, gathering with friends, family, all in the name of **protecting the health and wellbeing of everyone**.

The truth is that no one nor any agency, not EPA, not DTSC, has a clear understanding of how the **complex mixture** of highly toxic and dangerous chemicals at this site will negatively affect all life, human and wildlife, into the future. (See attached paper by EPA 2005 on Toxaphene, only one of the 100 chemicals at the site, as an example).

Please take interest and action to reverse the 2021 decision to approve the huge

residential development on the Campus Bay Site, so that.

Thank you for your time and attention.

Doria Mueller-Beilschmidt

ACSM CPT, MS Biology

415 Dimm St.

Richmond, CA 94805

510-815-1681

From: [Office of Public Engagement](#)
To: doria.leone@gmail.com
Subject: EPA Completes Record Number of Superfund Cleanups through Lean Management
Date: Wednesday, November 18, 2020 4:33:49 PM

https://us.vocuspr.com/Publish/518041/vcsPRAsset_518041_117711_2120a5ab-9820-4f22-a0bb-776de69ae74d_0.jpg



EPA Completes Record Number of Superfund Cleanups through Lean Management

WASHINGTON — The U.S. Environmental Protection Agency (EPA) [recently announced](#) that it has implemented the EPA Lean Management System (ELMS), a systematic approach to continuous process improvement, to 83% of the agency.

EPA's Office of Land and Emergency Management (OLEM) has accounted for 15 process improvements—most notably in its management of the Superfund program.

“Completion of Superfund site cleanups is key focus for the Trump Administration and prioritizing completion of Superfund deletions demonstrates that commitment and OLEM is particularly proud of the significant efficiencies we have realized in this area through the thoughtful application of ELMS tools,” **said Assistant Administrator Peter Wright.**

ELMS is based on lean principles used for years by the private sector and is composed of six components: visual management, standard process, cascading performance measures, problem solving, business reviews & huddles, and leader behaviors. EPA implementation of each of these elements has allowed EPA to make significant improvements to the speed and quality at which it delivers its services to the American people.

EPA Office of Continuous Improvement – the team responsible for implementing ELMS – set a goal to deploy this system to 80% of agency personnel and use it to improve 250 processes by fiscal year 2020. Both goals were successfully met with the agency reporting over 500 processes improved and 83% of personnel using ELMS.

OLEM used ELMS tools to evaluate the process of deleting sites from the Superfund program's National Priorities List, upon completion of the Agency's remedial cleanup work. The team successfully reduced the administrative burden of rulemaking by consolidating the content of 17 deletion actions into a single federal register notice, rather than processing each action individually. This consolidation reduced workloads, eliminated redundant reviews, and lowered program costs.

In fiscal year 2020, the program saw a 30% reduction in administrative transactions, while maintaining the same level of deletion accomplishments as the prior year, notably the most deletions in any year since 2001. The program has now fully transitioned to consolidated rulemaking. An additional 80% reduction in administrative transactions is projected for fiscal year 2021 and beyond.

Additionally, over the last two years, EPA's Office of Underground Storage Tanks (OUST) undertook two ELMS projects, both focused on speeding up the time EPA takes to start leaking underground storage tank (LUST) cleanups in Indian country. In fiscal year 2019, OUST reduced the time for deciding which projects to fund from 221 days to 158 days. In fiscal year 2020, OUST reduced the time to review and approve contractor workplan proposals, approving them between

57 and 73 percent faster. Both of these efforts help start LUST cleanups faster and improve environmental protection in Indian country.

As part of the new system, the executives in EPA's 23 national programs and regional offices monitor over 800 measures each month. If a measure's target is not met, problem solving is performed and a plan is created for getting back on track. In addition, over 10,000 of EPA's staff on the front line now huddle in small groups for 15 minutes each week to review electronic boards used to track the flow of their team's work and the metrics used to measure process performance.

"I'm extremely proud of this agency's embrace of lean principles and commitment to continuous improvement," **said Henry Darwin, EPA's chief operating officer and visionary behind ELMS.** "Setting numeric goals, tracking workflow and performance, and solving problems using data and evidence is how I believe this agency can better protect human health and the environment. ELMS has given EPA employees a new way to accomplish our mission and the results speak for themselves."

Some of the other most notable process improvements that have been made across EPA since the system was implemented included reducing the agency's backlog of Freedom of Information Act requests by almost 45%, increasing the number of inspections reports that are completed on-time and communicated to the regulated entity from around 49% to 82%, and a reduction in the number of backlogged new permit applications by almost 150.

For more information of EPA's continuous improvement efforts, please visit: <https://www.epa.gov/aboutepa/about-office-continuous-improvement-oci>.

For more on EPA's 50th Anniversary and how the agency is protecting America's waters, land and air, visit: <https://www.epa.gov/50>, or follow the agency on social media using #EPAat50.

If you would rather not receive future communications from US EPA, Office of Public Engagement, let us know by clicking [here](#).
US EPA, Office of Public Engagement, 1200 Pennsylvania Avenue NW, Washington, DC 20460 United States



OFFICE OF INSPECTOR GENERAL

Catalyst for Improving the Environment

Ombudsman Report

More Information Is Needed On Toxaphene Degradation Products

Report No. 2006-P-00007

December 16, 2005



Report Contributors: Christine Baughman
Tapati Bhattacharyya
Stephen Schanamann
Frances E. Tafer
Michael H. Wilson

Abbreviations

CLE	Cod liver extract
DDT/DDE	Dichlorodiphenyltrichloroethane and its metabolic byproduct, DDE
EPA	U.S. Environmental Protection Agency
GA/DNR	Georgia Department of Natural Resources
GC/ECD	Gas chromatography with electron capture detector
HCH	Halogenated hydrocarbons
IRIS	Integrated Risk Information System
MATT	Investigation into the Monitoring, Analysis, and Toxicity of Toxaphene
MCL	Maximum containment level
MNA	Monitored natural attenuation
NIMS	Gas chromatography with negative ion mass spectroscopy
NPDWR	National Primary Drinking Water Regulations
OIG	Office of Inspector General
PCB	Polychlorinated biphenyl
ppb	Parts per billion
ppt	Parts per trillion
PWS	Public water system
RfD	Reference dose
SW-846	Test Methods for Evaluating Solid Waste, Physical/Chemical Methods
TCDD	Tetrachlorodibenzo- <i>p</i> -dioxin
TDI	Tolerable daily intake
ug/L	Micrograms per liter

Cover photo: An airplane applying pesticides to a field.



At a Glance

Catalyst for Improving the Environment

Why We Did This Review

The Glynn Environmental Coalition, a nonprofit community organization, brought to the Ombudsman's attention concerns about toxaphene at a Superfund site in Georgia.

Background

Toxaphene is an agricultural pesticide that was heavily used in the United States during the 1960s and 1970s. EPA banned it for most uses in 1982, and for all uses in 1990, because it posed a risk of significant adverse impacts on humans and the environment. To further protect people from the effects of toxaphene, EPA limited how much toxaphene can be in drinking water and required related monitoring. The EPA Superfund program is cleaning up numerous sites contaminated with toxaphene.

For further information, contact our Office of Congressional and Public Liaison at (202) 566-2391.

To view the full report, click on the following link:

www.epa.gov/oig/reports/2006/20051216-2006-P-00007.pdf

More Information Is Needed On Toxaphene Degradation Products

What We Found

Toxaphene in the environment changes, or degrades. The resulting degradation products are different from the original toxaphene in chemical composition and how they appear to testing instruments, so they could go unreported. The analytical methods EPA uses to identify and measure toxaphene are not designed to identify toxaphene degradation products. However, a new testing method used by others specifically tests for toxaphene degradation products. We believe EPA should validate, approve, and use this method.

Certain toxaphene degradation products accumulate inside people. Although studies indicate that some of these degradation products may be harmful, more research is needed to determine how much of a risk these products pose to people.

What We Recommend

We recommend that the EPA Administrator direct

- The Assistant Administrators for Water and for Solid Waste and Emergency Response to validate and approve the new analytical method that tests for toxaphene degradation products, and use the new method to analyze environmental samples.
- The Assistant Administrator for Research and Development to work with others in EPA to arrange for the specific research needed to determine the risk that toxaphene degradation products may pose to people.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

THE INSPECTOR GENERAL

December 16, 2005

MEMORANDUM

SUBJECT: More Information Is Needed On Toxaphene Degradation Products
Report No. 2006-P-00007

TO: Stephen L. Johnson
Administrator

This is our final report on a review of toxaphene conducted by the Office of Inspector General (OIG) of the U.S. Environmental Protection Agency (EPA). This report contains findings that describe the problems the OIG has identified and corrective action the OIG recommends. This report represents the opinion of the OIG and the findings contained in this report do not necessarily represent the final EPA position. Final determinations on matters in this report will be made by EPA managers in accordance with established resolution procedures.

Action Required

In accordance with EPA Manual 2750, you are required to provide a written response to this report within 90 calendar days of the date of this report. You should include a corrective action plan for agreed upon actions, including milestone dates. We have no objection to the further release of this report to the public. For your convenience, this report will be available at <http://www.epa.gov/oig/publications.htm>.

If you or your staff have any questions regarding this report, please contact me at 202-566-0847 or Eileen McMahon, the Assistant Inspector General for Congressional and Public Liaison, at 202-566-2546.

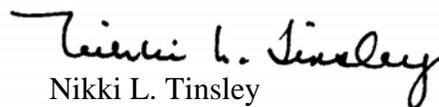

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Chapter 1

Introduction

Purpose

The purpose of this report is to bring issues related to toxaphene, an agricultural pesticide, to the attention of EPA management. The issues about toxaphene stem from a complaint made by the Glynn Environmental Coalition (a nonprofit community organization) to the Ombudsman at the U.S. Environmental Protection Agency's (EPA's) Office of Inspector General (OIG). The OIG Ombudsman reviews and reports on public concerns regarding EPA activities, including Superfund, which is the EPA program to clean up uncontrolled hazardous waste sites. The complaint pertained to toxaphene found at the Hercules 009 Landfill Superfund site in Georgia, in EPA Region 4. We have issued a separate report to the Regional Administrator of Region 4 recommending appropriate actions regarding the Hercules 009 Landfill (Report No. 2005-P-00022, September 26, 2005). However, since we found that the issues related to toxaphene were broader than just that site, we believe EPA needs to address them nationwide.

Background Information

Toxaphene first became available commercially in 1948. Toxaphene came in various forms and was used against insect pests of cotton, tobacco, forests, turf, ornamental plants, grains, vegetables, and livestock. It was also used in the 1950s and early 1960s by fisheries in several States to remove unwanted fish from lakes and ponds. This use was discontinued or prohibited when unexpectedly high amounts remained in some lakes. During the 1960s and 1970s, it was the most heavily used pesticide in the United States, with the southern United States and California using it the most.

Toxaphene poses a risk of significant adverse impacts on humans and the environment. If people breathe, eat, or drink large amounts of toxaphene, it may damage the lungs, nervous system, and kidneys, and can even cause death. Consequently, with a few exceptions, EPA cancelled the registrations for all uses of toxaphene in November 1982. A registration is a license allowing a pesticide product to be sold and distributed for specific uses in accordance with specific use instructions, precautions, and other terms and conditions. Although most of the existing stocks of cancelled products had to be sold and used before 1984, some could be sold and used according to label specifications through 1986. EPA banned all uses of toxaphene in 1990.

Although toxaphene can no longer be used, some remains in the environment. People must be protected from its effects. Therefore, under the Safe Drinking Water Act, EPA set a limit on the amount of toxaphene that can be in the drinking water: the limit is 0.003 milligrams per liter. As a result, public water systems must monitor the level of toxaphene in their drinking water. Also because of health risks associated with toxaphene, various States have issued a total of 25 advisories that people not eat fish from 10 locations around the country. Toxaphene was identified as a contaminant of concern in at least 16 Superfund sites; these sites, most of which are located in the southeastern part of the United States, are identified in Appendix B. Other information indicates toxaphene has been found in as many as 58 Superfund sites.

When toxaphene is released in the environment, it transforms into substances known as toxaphene degradation products that may be harmful to human health. The extent of the health risk depends on the amount of degradation products to which people are exposed, and the types of danger the substances pose. Therefore, to assess the potential human health risk associated with toxaphene degradation products, information on both amounts and dangers is needed. Chapter 2 of this report addresses (1) identifying and measuring toxaphene degradation products to determine exposure, and (2) potential dangers. Appendix A contains a technical discussion of these matters.

Scope and Methodology

We began field work on this review in June 2004 and completed it in January 2005. During that period, we interviewed EPA officials in Region 4, the Office of Solid Waste and Emergency Response, and the Office of Research and Development. We also met with representatives of the Glynn Environmental Coalition, U.S. Army Corps of Engineers, and the Skidaway Institute of Oceanography. The OIG team reviewed toxaphene testing protocols and about 50 journal articles on toxicity and exposure issues related to toxaphene, and obtained additional information from various Federal Internet sites.

On August 12, 2005, the OIG issued a draft report to the EPA Administrator for review and comment. The Deputy Administrator responded on September 26, 2005. This response, which included comments from the Office of Research and Development, Office of Solid Waste and Emergency Response, and Office of Water, stated that EPA generally concurred with the recommendations. They suggested some specific changes to the report. As appropriate, we revised the report based on their comments. We provide a summary and general evaluation of the EPA comments and our response at the end of Chapter 2. We included the Deputy Administrator's memorandum in Appendix C. Appendix D is the OIG evaluation of the technical aspects of the EPA response.

We performed our review in accordance with *Government Auditing Standards* issued by the Comptroller General of the United States. However, our review of

management controls and compliance was limited to those directly related to the issue under review.

The findings in this report are not binding in any enforcement proceedings brought by EPA or the Department of Justice under the Comprehensive Environmental Response, Compensation, and Liability Act to recover costs incurred not inconsistent with the National Contingency Plan.

Chapter 2

Exposure and Risk Information about Toxaphene Degradation Products Is Needed

Exposure and risk information is necessary to complete a risk assessment of the toxaphene degradation products that result when toxaphene is released into the environment. A few studies indicate these degradation products may pose a danger to human health, but more research on the risks is needed. To determine exposure, an analytical method that identifies and measures toxaphene degradation products is required. One is available, but needs to be approved by EPA for use in its programs.

Toxaphene Degrades in the Environment

Toxaphene was a mixture of many organic chemicals that, when released into the environment, slowly changed. The original toxaphene was produced by the chlorination of camphene, resulting in a mixture of more than 200 compounds, mostly polychlorinated camphenes and bornanes. Generally, from six to nine chlorines were attached to the camphenes and bornanes, and the average chlorine content was 67 to 69 percent.

In the environment, the original toxaphene mixture dechlorinates; it breaks down (or degrades) and the components lose chlorines. It degrades with or without air present. Exactly what happens to it in the environment depends on the situation. For example, microbes in the soil are known to break down the original toxaphene into two major degradation products (i.e., Hx-Sed and Hp-Sed) and several minor degradation products. Some of the less abundant degradation products identified in soil include p26, p40, p41, p44, and p50. These degradation products are a different mixture than the original toxaphene mixture, so they appear different to the testing instruments.

Some Degradation Products Accumulate in Humans

Toxaphene degradation products can be detected in human blood, urine, breast milk, and body tissues. Toxaphene or toxaphene degradation products generally get into the body through eating fish or drinking water contaminated with these substances. Babies may be exposed if they are breast fed and the mother had been exposed. The body processes (i.e., metabolizes) these substances and most of them leave the body. Hx-Sed and Hp-Sed are examples of degradation products that quickly leave the body. However, some of the degradation products stay in the body; they accumulate or build up. These include p26, p40, p41, p44, p50,

and p62. Because these degradation products accumulate in the body, they may pose a continuing risk to the person.

Studies Indicate Degradation Products May Pose a Risk

EPA was aware of the potential danger of toxaphene degradation products when it banned toxaphene. However, specifics were not known concerning which of the degradation products posed the danger and how much danger they posed. EPA's September 1986 Ambient Aquatic Life Water Quality Criteria for Toxaphene noted:

The compositional changes that occur in the field probably also mean that field toxicity differs to some unknown extent from toxicity determined in laboratory tests using technical-grade toxaphene. Using mice, houseflies, and goldfish, Khalifa et al. (1974), Saleh et al. (1977), and Turner et al. (1975, 1977) demonstrated that different toxaphene components have substantially different toxicities. Toxaphene that had "weathered" for 10 months in a lake was altered chemically (diminution of late eluting peaks) and was somewhat less toxic to fish than the original formulation (Lee et al. 1977). In contrast, Harder et al. (1983) found that sediment-degraded products of toxaphene were more toxic than the parent material to some saltwater fishes.

In recent years, new scientific data have emerged on the dangers posed by toxaphene degradation products that accumulate in a person, such as p26, p50, and p62. A 1997 study showed that p26 and p50 caused more abnormalities in the central nervous systems of rat embryos than toxaphene caused. Another study showed that a cod liver extract containing three toxaphene degradation products (p26, p50, and p62) promoted the growth of tumors more than the original toxaphene mixture. However, the quality of this study has not been evaluated and an EPA toxicologist in Region 4 is concerned that the authors of the study erred in their interpretations.

More Studies Are Needed

More scientific data are needed on the dangers posed by toxaphene degradation products. Since the continuing risk to humans is limited to the degradation products that accumulate in the body, future studies should center principally on p26, p40, p41, p44, p50, and p62. Hx-Sed and Hp-Sed should also be considered for study because, although they do not accumulate in people, they generally occur in larger amounts. Further, the studies should address the likelihood that these degradation products will cause tumors (i.e., cancer) or will harm embryos.

The EPA Office of Research and Development has already funded some studies related to toxaphene degradation products. EPA program offices would need to

provide funds to support additional studies. Such studies should be of interest to EPA's Office of Water and Office of Solid Waste and Emergency Response because, if studies show toxaphene degradation products pose a danger to human health, their programs would need to address the dangers by developing acceptable human exposure limits to mixtures of the substances. Further, until more is known, EPA will be unable to definitively determine if the cleanup of Superfund sites contaminated with toxaphene (such as the Hercules 009 Landfill) protect human health and the environment. In responding to the draft OIG report on the Hercules 009 Landfill, Region 4 agreed that additional toxicity studies of toxaphene degradation products may be helpful.

Degradation Products Should Be Monitored

Since toxaphene degradation products may pose a risk to human health, they should be monitored in the environment to obtain exposure information. As noted above, exposure information is necessary to perform a risk assessment. The ability to identify and measure toxaphene degradation products should be used by various EPA programs. Specifically, toxaphene degradation products should be targeted for analysis at toxaphene-containing sites (e.g., Superfund sites) or in toxaphene-containing media (e.g., water).

For a site to become part of the Superfund program, evidence must exist that a hazardous substance was released from the site. Under EPA's November 1992 Hazard Ranking System Guidance Manual, this evidence could include breakdown (or transformation) products. Also under the Superfund and other programs, according to EPA's April 1999 Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites, if a site has contaminants that are being allowed to naturally degrade (or attenuate), then monitoring should identify any potentially toxic and/or mobile transformation products. Similarly, drinking water must be monitored for contaminants with established standards, and for contaminants for which EPA may want to establish standards.

A Different Analytical Method is Needed to Identify Degradation Products

The analytical methods approved by EPA to identify and measure toxaphene do not evaluate toxaphene degradation products. The approved methods generally use a testing instrument called a gas chromatograph with electron capture detectors, and have been proved to be capable of testing for the original toxaphene mixture, but have not been formally validated for toxaphene degradation products. However, as noted above, the toxaphene degradation products are a different mixture than the original toxaphene mixture.

A new analytical method using a gas chromatograph with negative ion mass spectroscopy (NIMS) should be used to test for toxaphene degradation products.

Academia and the European Union have successfully used the NIMS method for at least 5 years to test for toxaphene degradation products in the environment.

The NIMS method provides definitive test results because the technique generates a mass spectrum for each compound in an environmental sample. A mass spectrum is like a chemical “fingerprint.” If the “fingerprint” of an unknown compound in the environmental sample matches the known “fingerprint” of the toxaphene degradation product, the resulting match of the “fingerprints” would definitively identify the presence of toxaphene degradation products. On the other hand, if the “fingerprints” do not match, then the NIMS method would definitively determine that toxaphene degradation products are not present. Therefore, the use of the NIMS method provides the certainty needed to determine whether the environment is contaminated by toxaphene degradation products.

EPA Should Approve the NIMS Method

Environmental data used to make public health decisions should generally be produced through analytical methods that have been proven (or validated) by several laboratories and approved by EPA. Both EPA’s Office of Solid Waste and Emergency Response and Office of Water have established procedures for approving analytical methods used by their programs. Since EPA has not approved the NIMS method, it should be subjected to the approval process of both offices.

People or companies may ask that EPA (i.e., the Office of Water, or the Office of Solid Waste in the Office of Solid Waste and Emergency Response) approve a new way to prepare a sample, a new way to analyze a sample, or a variation on an existing way. Such requests can also come from within EPA. If approval of a new analytical method is requested, those requesting approval must prove that the proposed method will accurately measure the amount of the specified substance in an environmental sample. If the new method will be used nationwide, three or more different laboratories must validate the method. Following validation, those requesting approval submit a variety of information to EPA about the new or revised method, including the results from the validation process, and explain why a change is needed.

If EPA agrees that a new analytical method should be adopted nationwide, how it is approved depends on whether it is for the Office of Water or the Office of Solid Waste and Emergency Response. The Office of Water must add the new method to the *Code of Federal Regulations*. This process takes several months, including publishing a proposed rule, evaluating the resulting comments from the public, and then issuing a final rule. The Office of Solid Waste approves the new method by adding it to its manual of EPA-approved methods. The public may review proposed updates to the manual before the changes become part of the manual.

Recommendations

1. We recommend that the Administrator direct the Assistant Administrators for Water and for Solid Waste and Emergency Response to:
 - a. Develop, validate, and approve the gas chromatograph with negative ion mass spectroscopy method to analyze toxaphene degradation products, especially p26, p40, p41, p44, p50, p62, Hx-Sed, and Hp-Sed; and
 - b. Use the gas chromatograph with negative ion mass spectroscopy method to analyze for toxaphene degradation products during sampling and testing at sites known to contain toxaphene, or whenever monitoring for toxaphene contamination.
2. We recommend that the Administrator direct the Assistant Administrators for Research and Development, for Water, and for Solid Waste and Emergency Response to arrange for specific research into the dangers of tumors (i.e., cancer) and of harm to embryos posed principally by a mixture of toxaphene congeners and metabolites found in fish.

Agency Comments and OIG Evaluation

In a memorandum dated September 26, 2005, the Deputy Administrator provided comments on the draft report from the Office of Research and Development, Office of Solid Waste and Emergency Response (both the Superfund program staff and solid waste program staff), and the Office of Water. In general, EPA officials concurred with the recommendations. The Deputy Administrator's memorandum is Appendix C.

The OIG's technical evaluation of the EPA response is Appendix D. In summary, we changed recommendation 1b in a manner similar to that suggested by the Office of Solid Waste. We also changed recommendation 2 as requested by the Office of Research and Development. Finally, based on the response from the Office of Water, we believe that Office has not fully appreciated the impact toxaphene degradation products may make on the National Primary Drinking Water Regulations.

Technical Discussion on Toxaphene

The original toxaphene pesticide mixture is known to degrade in the environment, so its degradation products may be present at Superfund sites (such as the Hercules 009 Landfill in Georgia) or in the drinking water. However, the analytical methods approved by EPA will detect and measure toxaphene, but not toxaphene degradation products. Therefore, EPA needs to use a different analytical method, such as gas chromatography with negative ion mass spectroscopy, to definitively determine if toxaphene degradation products are present in the environment and the food chain. Also, there are indications that some of the toxaphene degradation products may be at least as toxic as the original toxaphene. To assess the health risks these degradation products may pose to humans, research is needed on their carcinogenicity and embryotoxicity.

Basics of Toxaphene Chemistry

A basic understanding of the chemical structure of toxaphene is needed to address the issue. Unlike most organic environmental pollutants, toxaphene is not a single organic compound. As manufactured, the original toxaphene pesticide is a mixture of more than 200 closely related chlorinated organic compounds. This original toxaphene pesticide mixture is commonly known as “technical” toxaphene. Technical toxaphene consists mainly of polychlorinated bornanes with six to nine chlorines attached. The term, congener, is used to refer to a single, structurally-unique constituent of the mixture. In other words, at least 200 individual toxaphene congeners make up the original toxaphene pesticide mixture. Individual congeners are often given their own names, such as Hx-Sed, Hp-Sed, p26, or p50.

Technical Toxaphene Degrades in the Environment

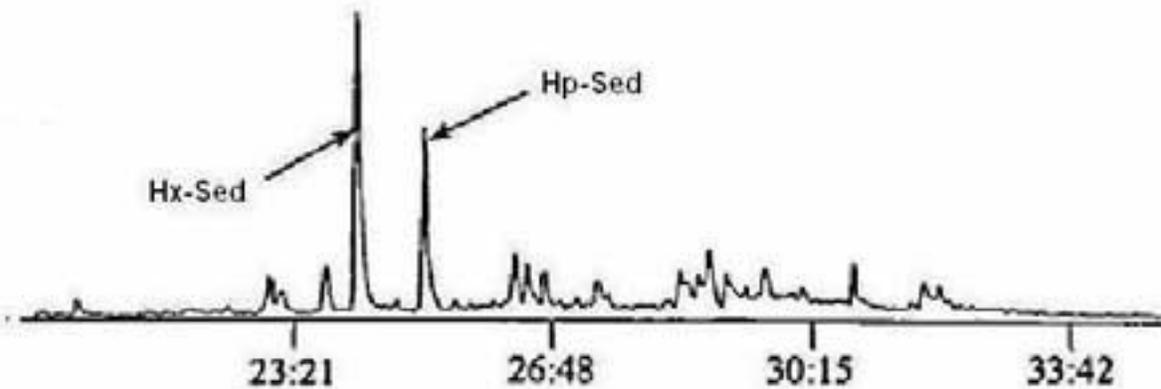
In the OIG’s review of the available scientific literature on the environmental degradation of technical toxaphene, we found numerous references to biotic and abiotic degradation, and to aerobic and anaerobic degradation. The aerobic degradation of technical toxaphene occurs at the slowest rate and has an aerobic half-life report of about 10-14 years (Fingerling, 1996). On the other hand, anaerobic degradation of technical toxaphene occurs at a much faster rate and has an anaerobic half-life of about 6 weeks. Therefore, since the use of toxaphene was severely restricted in 1982, any technical toxaphene left in the environment from 1982 or before has theoretically undergone two or more half-lives. Thus, at most, only 25 percent of the original starting material should theoretically still be present. By contrast, the only reported condition under which toxaphene does not degrade is autoclaved soil (i.e., all microbes in the soil have been killed off) (Fingerling 1996). Therefore, technical toxaphene is expected to degrade in the environment and its degradation is mediated primarily by microbes living in the soil.

Anticipated Toxaphene Degradation Products

Upon instrumental analysis by a gas chromatograph with electron capture detector (GC/ECD), the original technical mixture – a mixture of 200 or more congeners – produces a complex,

multi-peaked chromatogram (see Figure 1B below). However, technical toxaphene is known to undergo microbial degradation in soil. Since the soil at the Hercules 009 Landfill site has been stabilized with cement, the free exchange of oxygen into the soil from the air is unlikely. Therefore, anaerobic microbial degradation is the most likely degradation process for the buried toxaphene waste at the Hercules 009 Landfill site.

(A) Toxaphene Degradation Products in Soil



(B) Technical Toxaphene

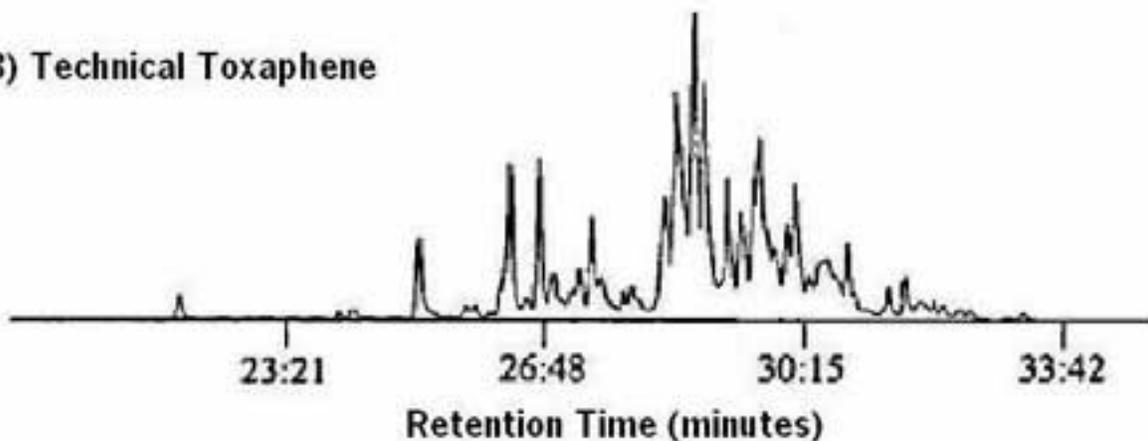


Figure 1: Chromatograms of Technical Toxaphene and Degraded Toxaphene are Completely Different

The major anaerobic microbial degradation products in soils or sediments are known to be Hx-Sed and Hp-Sed (Braekevelt, 2001). This microbial degradation of technical toxaphene produces a much simplified chromatogram (see Figure 1A above). Therefore, upon analysis at an environmental laboratory, the degraded toxaphene chromatogram appears completely different from the technical toxaphene chromatogram.

Although Hx-Sed and Hp-Sed are the major anaerobic degradation products in soil, degraded toxaphene chromatogram (see Figure 1A) also shows a significant number of other, less abundant anaerobic microbial degradation products. These less abundant toxaphene congeners in soil have been identified and are known to include p26, p50, p40, p41, and p44 (Maruya,

2001a). As discussed in more detail later, these less abundant toxaphene degradation products constitute the majority of risk to human health because they are not effectively metabolized by the body, which causes them to bioaccumulate. Hx-Sed and Hp-Sed are readily metabolized by the body and excreted, so they should not constitute a major risk to human health. However, since Hx-Sed and Hp-Sed are the major anaerobic degradation products, they are easier to detect than the other less abundant toxaphene congeners and could be used to indicate that toxaphene degradation products are present in the sample.

The implication of toxaphene's degradation is that humans are exposed to toxaphene's degradation products and not to the original technical toxaphene mixture (de Geus, 1999), (McHugh, 2003). Consequently, EPA's approach of using GC/ECD to test for the original technical toxaphene in the environment to identify toxaphene contamination is incorrect. EPA needs to test for individual toxaphene degradation products (i.e., specific congeners) in order to identify the presence or absence of toxaphene contamination in the environment.

Evaluating the Potential Risk to Humans from Toxaphene Exposure

Conducting a detailed and comprehensive risk assessment for the potential exposure to toxaphene from the Hercules 009 Landfill site is a complex task that is beyond the scope of this OIG review. Furthermore, detailed information is lacking on the potential human exposure to toxaphene degradation products and their toxicity, which limits the ability to conduct a thorough risk assessment. However, the potential risk to human health from toxaphene exposure can still be conceptually understood.

In general, a major factor needed to evaluate the level of risk to human health is to determine the major human exposure pathways (sources) to toxaphene's degradation products and to determine all potential sources. The Hercules 009 Landfill site is just one of the potential exposure sources. A toxaphene exposure study from the Netherlands used a model to estimate the exposure of the Dutch population to toxaphene (Fiolet and van Veen, 2001). This model identified that the main route of exposure to relatively soluble toxaphene congeners is approximately 80 percent from fish and 11 percent from drinking water. Another toxaphene exposure study, by Buranatrevedh, also concluded that the main route of exposure is about 93 percent from fish and about 7 percent from surface waters (Buranatrevedh, 2004). The remaining exposure routes (i.e., air and soil) are practically negligible. Based on these national toxaphene exposure studies, the main exposure risk to toxaphene is clearly from fish and from potential sources of drinking water. Although specific site conditions and other site specific variables at Hercules 009 Landfill will shift the relative levels for these various exposure routes, these national toxaphene exposure studies identify that the principal exposure routes of concern to the surrounding community are the fish in the diet and the potential for contaminated drinking water.

Another major factor needed to evaluate the level of risk to human health is what specific toxaphene congeners pose chronic risk to humans. The major toxaphene congeners found in fish are p26, p50, and p62; but p40, p41, and p44 are also present to a lesser extent (Fiolet and van Veen, 2001). The major anaerobic microbial degradation products in soils that may contaminate the groundwater are Hx-Sed and Hp-Sed, but p26, p50, p40, p41, and p44 are also found in soil to a lesser extent (Maruya, 2001a).

Although humans are exposed to a variety of toxaphene degradation congeners, most of these congeners can be rapidly metabolized via dechlorination, dehydrodechlorination, and oxidation, primarily through the action of the mixed function oxidase system and other hepatic microsomal enzymes (EPA Office of Water, 1999). For example, the primary toxaphene degradation products in soil (i.e., Hx-Sed and Hp-Sed) are expected to be easily metabolized and excreted with reported half-lives in fish of 5 and 13 days respectively (Smalling, 2004).

However, a limited number of toxaphene congeners (i.e., p26, p50, p40, p41) are poorly metabolized and can not be readily excreted, causing these congeners to accumulate in the body. These poorly metabolized congeners share a common structural pattern of alternating single chlorine substitutions (i.e., endo, exo) on the #2, #3, #5, and #6 carbons of the six-member ring (Maruya, 2000). Specifically, the poorly metabolized p26 and p50 congeners have half-lives of about 1 year in wild fish (Smalling, 2004). However, five toxaphene congeners (i.e., p26, p50, p40, p41, and p44) are not readily metabolized and excreted and, thus, can accumulate in the human body.

In order to evaluate the level of risk to human health, EPA needs to know the concentration of these five congeners and their metabolite precursors in the environment. Since these five toxaphene congeners represent the long-term chronic toxaphene exposure problem for humans, the toxicity of these five individual congeners, a mixture of these five congeners, or both, needs to be determined in more detail than is available in the scientific literature.

Human Exposure to Toxaphene Degradation Congeners

The following two academic studies have independently identified and documented human exposure to the individual toxaphene degradation congeners:

- In 1996, Dr. Gill used gas chromatography with negative ion mass spectroscopy (NIMS) to detect and measure toxaphene congeners in human blood serum (Gill, et al., 1997). Specifically, Dr. Gill's study documented the presence of p26, p50, p44, p40, and p41 congeners at a concentration of 2-200 parts per trillion (ppt) or up to 0.2 parts per billion (ppb) in human blood serum from Native Canadian communities. These five toxaphene congeners represented 95 percent of the toxaphene congeners found in human serum.
- In 2003, Dr. Barr used a sophisticated analytical technique to detect and measure toxaphene congeners in pooled human blood serum collected by the Red Cross in Atlanta in 1987, in Chicago in 1992, and in Cincinnati in 1994 (Barr, 2004). Specifically, Dr. Barr's study documented the presence of p26, p50, and possibly p40, p41, and p44 congeners at a concentration of 3-30 ppt (i.e., 0.03 ppb) in human blood serum from an undefined number of American blood donors.

These studies are critically important in identifying and simplifying the assessment of the risk to humans resulting from environmental exposure to toxaphene. These studies dramatically indicate that human risk is not to "technical" toxaphene's 200-plus congeners, but that the long-term chronic toxaphene exposure in humans is limited and simplified to just five toxaphene

congeners (i.e., p26, p50, p40, p41, and p44) that the human body has difficulty metabolizing and eliminating, causing them to accumulate in the body.

Carcinogenicity of p26 and p50 Congeners

The EPA's Integrated Risk Information System (IRIS) database identifies technical toxaphene as a category B2 probable human carcinogen with a cancer potency factor of 1.1 mg/kg/day. However, there is limited scientific data on the carcinogenicity of persistent toxaphene degradation congeners, such as p26 and p50. But other chemical mixtures of congeners show that individual congeners can be significantly more carcinogenic than the original technical mixture. The classic example is dioxin, where 2,3,7,8-TCDD (tetrachlorodibenzo-*p*-dioxin) is up to 10,000 times more carcinogenic than other dioxin congeners. Another example is that bioaccumulated polychlorinated biphenyl (PCB) congeners appear to be more carcinogenic than the original "commercial" PCB mixture (EPA 7C-R293-NTSX). This clearly indicates that the carcinogenicity of the original technical toxaphene mixture cannot be applied to the carcinogenicity of the individual congeners, specifically, p26 and p50.

The European Union has conducted an Investigation into the Monitoring, Analysis, and Toxicity of Toxaphene in Marine Foodstuffs (MATT project). The MATT project predicted the tumor promoting potency of technical toxaphene and a cod liver extract (CLE) containing p26, p50, p62 in a bioassay measuring the inhibition of intracellular communication between Hepa1c1c7 cells (FAIR CT PL.96.3131). The CLE toxaphene congener mixture mimics the environmental exposure to the toxaphene congeners that are found in humans (e.g., p26, p50). The results reported from this bioassay indicate that the CLE toxaphene mixture is a more potent tumor promoter than the original technical toxaphene mixture. The MATT project estimated a tolerable daily intake (TDI) to "weathered" toxaphene residues of 0.69 mg/kg/day. In general terms, the MATT project's TDI estimate makes the toxaphene degradation products found in humans to be about twice as carcinogenic as the original technical toxaphene mixture. However, the report on the MATT project has not yet been peer reviewed.

An EPA Region 4 toxicologist believes that the conclusions reached in the MATT project may be incorrect and, in the response to the draft OIG report on the Hercules 009 Landfill, outlined why. Despite this, the MATT project is the sole toxicological study based on toxaphene degradation products and, thus, is chemically most relevant to human exposure. Region 4 may base its interim strategy for assessing the risk of toxaphene degradation products on the MATT laboratory study. The OIG believes more definitive toxicology studies are needed to verify the carcinogenicity of the individual p26 and p50 toxaphene congeners. Region 4 agreed that additional toxicity studies may be helpful and suggested additional research in the areas of in vitro testing of tumor promotion, whole animal developmental studies, and critical periods of exposure early or late in life.

Embryotoxicity of p26 and p50

In a 1997 study using a rat embryo culture model, the p26 and p50 toxaphene congeners caused abnormalities in the central nervous system (Calciu, 1997). The total morphological scores at 100 ng/ml for p26 and p50 were slightly worse than the total morphological score for the

technical toxaphene. The significant finding from this study is that both the target site and type of toxicity are highly congener-specific. Therefore, the toxicity of technical toxaphene cannot and should not be used to predict the embryotoxic effects of the p26 and p50 congeners in humans. Thus, more scientific research is needed to evaluate the specific embryotoxic effects of p26 and p50 on humans.

Dr. Gill's study found concentrations of p26 and p50 at concentrations as high as 0.2 ppb in human blood serum (described above). The lowest dose in Dr. Calciu's rat embryo culture study was 100 ppb. The difference is a factor of 500, but the rat embryo culture study results represent only a 48-hour exposure to the rat embryos. This short exposure time does not directly correspond to human exposures to p26 and p50 over the full term of a pregnancy; human fetuses are exposed to a lower dose but for a longer period of time. Furthermore, the results from the rat embryo culture study represent dramatic development changes in which even subtle changes in human fetal development would be considered unacceptable. Therefore, additional research is needed to evaluate the potential for more subtle effects on embryo development when exposed to lower doses of p26 and p50 that correspond to actual human exposure levels. For example, in 1980, Dr. Olson observed behavior changes in rat offspring when pregnant rats were given low doses of technical toxaphene, p42a congener (referred to in the study as toxicant A), or p32 congener (referred to in the study as toxicant B) as measured by a swimming test and a maze retention test (Olson, 1980).

The embryotoxicity of toxaphene's persistent degradation products needs to be evaluated in the context of co-exposure with other persistent organochlorines (i.e., DDT/DDE, halogenated hydrocarbons (HCHs), and PCBs). The amount of p26 and p50 in human milk has been found to range from a low of 6 ug/kg lipid weight (i.e., ppb) in southern Canada to a high of 294 ug/kg lipid weight in Northern Quebec (Skopp, et al., 2002). This shows that babies are exposed through the mother's exposure to toxaphene degradation products before and after birth. Unfortunately, this observation about mother's milk is potentially problematic because an epidemiological study by Jacobson (Jacobson, 1996) indicates that developing embryos are the most susceptible target of organochlorines. Jacobson's study linked organochlorine exposure during fetal development to impaired cognitive development (e.g., low IQ scores).

Monitoring Should Identify Toxic Degradation Products

Monitored natural attenuation (MNA) is part of the remedy at Hercules 009 Landfill site. Superfund's MNA guidance (OSWER Directive 9200.4-17P) states EPA should evaluate for the potential presence of toxic transformation products. Toxaphene degradation products are a sub-category of transformation products. Specifically, the MNA guidance states:

The potential for creation of toxic transformation products is more likely to occur at non-petroleum release sites ... and should be evaluated to determine if implementation of a MNA remedy is appropriate and protective in the long term.

Furthermore, the MNA guidance states:

*... all [MNA] monitoring programs should be designed to accomplish the following: ...
Identify any potentially toxic and/or mobile transformation products.*

Therefore, the Superfund's MNA guidance expects EPA to anticipate and to test for the presence of potentially toxic degradation products at hazardous waste sites. Since toxaphene is known to degrade in the environment and these degradation products are thought to be toxic, at Superfund sites suspected to contain toxaphene, EPA should evaluate the environmental samples for toxaphene's degradation products, specifically, the Hx-Sed and Hp-Sed congeners, but also the p26, p50, p40, p41, and p44 congeners.

EPA Method 8081 Tests for Technical Toxaphene

EPA Method 8081 is an analytical testing technique that uses GC/ECD. When an environmental sample is tested by the GC/ECD, the instrument produces a chromatogram as a record of what was contained in the sample (see Figure 2A).

Each peak in the chromatogram of a known technical toxaphene standard (see Figure 2B) represents 1 of the 200 unique congeners in the technical toxaphene mixture. There are actually so many peaks that they clump together in some areas of the chromatogram. Method 8081 detects toxaphene by identifying five peaks to the right of the red line in the environmental sample (see Figure 2A) and comparing their shape and position to five peaks to the right of the red line in a known technical toxaphene standard (see Figure 2B). In this example, since both chromatograms match on the right hand side, the laboratory would report that toxaphene is present in this hypothetical environmental sample. EPA Method 8081 was designed and quite dependable for detecting the original technical toxaphene mixture in an environmental sample.

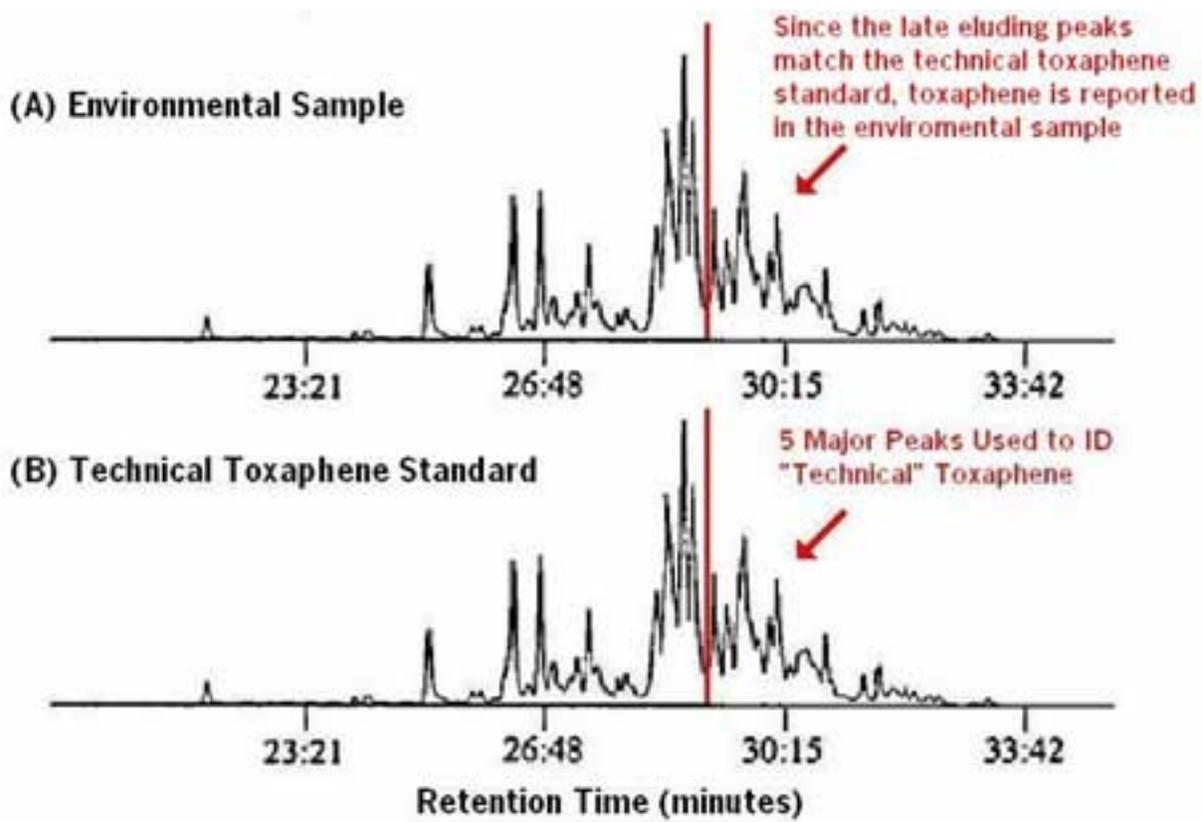


Figure 2: GC/ECD Chromatograms of Technical Toxaphene

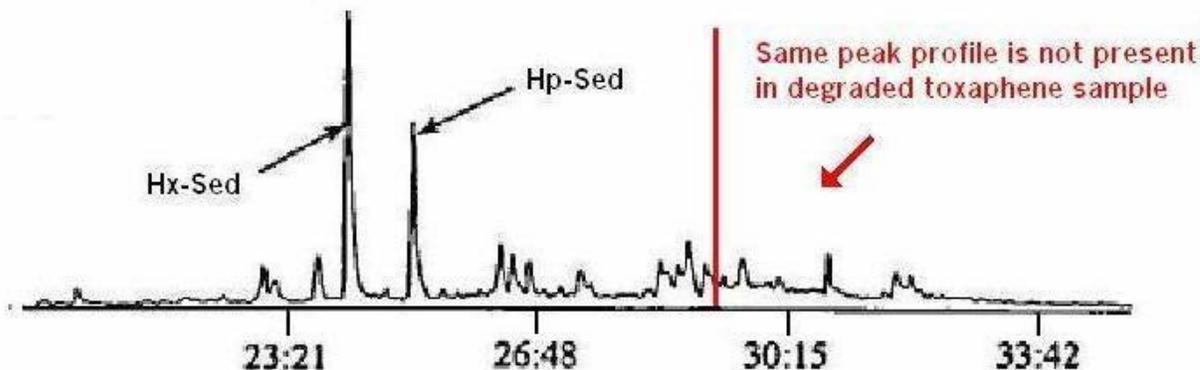
EPA Method 8081 Does Not Identify Toxaphene Degradation Products

EPA Method 8081, which is listed in EPA’s Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), uses a GC/ECD to analyze for the presence of toxaphene contamination. In order to identify the presence of a pollutant in an environmental sample, the retention time of a peak (representing a compound) in the sample’s chromatogram is compared against the retention time of a known chemical standard. For the purposes of detecting toxaphene in a sample, EPA Method 8081 calls for a peak profile match against at least five peaks in the latter section of the toxaphene window (see the peaks after about 29 minutes in chromatogram 3B). In other words, the observed relative abundance of late eluting toxaphene congeners (i.e., octa- and nonachlorobornanes) has to closely match the relative abundance of the octa- and nonachlorobornane congeners found in the technical toxaphene standard. While EPA Method 8081 is appropriate and highly accurate for detecting technical toxaphene, it is not effective for detecting degraded toxaphene (i.e., “weathered” toxaphene) in environmental samples (e.g., soil, water, fish).

For demonstration purposes, chromatogram 3A below is a known chromatogram of toxaphene degradation products in soils. When chromatogram 3A is compared by EPA Method 8081’s identification criteria for technical toxaphene, chromatogram 3A obviously does not have the same late eluting peak profile (i.e., the peaks after 29 minutes) as the technical toxaphene

standard. Therefore, a match is not made and the presence of toxaphene is not reported by the laboratory, even though specific toxaphene congeners (e.g., Hx-Sed, Hp-Sed) are known to be present. This example demonstrates the manner in which EPA Method 8081 fails to detect toxaphene degradation products (i.e., "weathered" toxaphene or individual toxaphene congeners) in environmental samples.

(A) Degraded Toxaphene in Soil



(B) Technical Toxaphene Standard

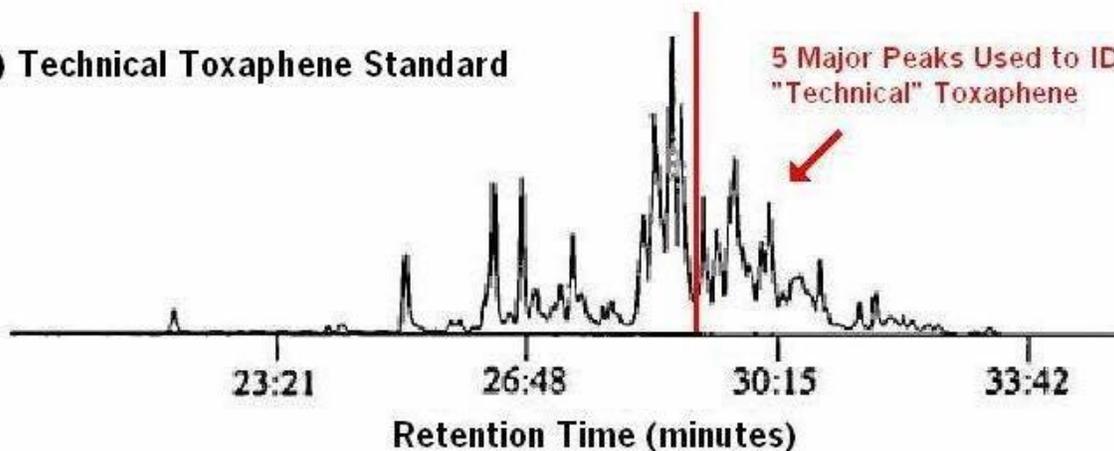


Figure 3: EPA Method 8081 Analyzes for Only Technical Toxaphene

An example of EPA Method 8081's failure to detect toxaphene's degradation products occurred in 1997 during the Georgia Department of Natural Resources' (GA/DNR's) study to measure the toxaphene levels in several species of fish and shellfish in and around Terry Creek. Terry Creek is another Superfund site in the Brunswick, Georgia, area that is contaminated with toxaphene due to previous manufacturing operations by Hercules Incorporated. The results of GA/DNR's study indicated no detectable quantities of toxaphene in every single fish sample analyzed. However, in 2001, Dr. Maruya of the Skidaway Institute of Oceanography re-analyzed the same fish and shellfish samples that were collected and analyzed by GA/DNR, but this time used both the GC/ECD technique and the NIMS congener-specific technique (Maruya, 2001b). The NIMS analytical technique was able to identify, while the GC/ECD technique was able to quantify, individual toxaphene congeners that were present in the fish samples at concentrations up to 1,420 parts per billion (ppb). The NIMS' identification of toxaphene contamination at Terry

Creek is in stark contrast to the results obtained by EPA Method 8081 alone that indicated no toxaphene contamination. Therefore, this example clearly shows that the analytical procedures specified in EPA Method 8081 do not identify degraded toxaphene in the environment.

Gas Chromatograph/Negative Ion Mass Spectrometry Can Be Used to Identify Toxaphene Degradation Products

Unlike the GC/ECD technique used in EPA Method 8081, NIMS can definitively and directly identify and measure individual toxaphene degradation products in the environment. The weakness in the GC/ECD technique used in EPA Method 8081 is that peak identification is based on only one factor: retention time. Therefore, even if the retention times match between the sample peak and the standard, the identity of the peak is still uncertain. By contrast, the NIMS technique uses two factors to identify peaks: retention time and a mass spectrum. A mass spectrum is analogous to a “fingerprint” of the compound. If the mass spectrum from the sample matches the mass spectrum of the standard, this definitively identifies the compound.

The NIMS methodology has been routinely used in academia since about 1993. For the last 5 years, the European MATT project has been using the NIMS method to monitor and document the levels of toxaphene degradation products in fish from the North Atlantic. Since the NIMS method has been developed and successfully implemented by others, EPA’s formal validation and standardization of the NIMS method should not present any major technical difficulties. Also, including the NIMS method in SW-846 would significantly facilitate (1) the evaluation of toxaphene degradation products in the environment by the regulated community and (2) the gathering of congener-specific data needed for accurate risk assessments of exposure to toxaphene’s degradation products.

Estimated Retention Time of Toxaphene Degradation Products

As described, EPA Method 8081 fails to identify toxaphene degradation products mainly because the identification criteria are based on seeing the late eluting peaks in technical toxaphene. However, an experienced chemist can still look for potential toxaphene degradation products in the GC/ECD data from the Hercules 009 Landfill. Although the Hercules 009 GC/ECD data do not include standards for the Hx-Sed and Hp-Sed toxaphene degradates, the expected retention time for Hx-Sed and Hp-Sed can be estimated from data published in the scientific literature (Figure 4 below). Since each technical toxaphene varies slightly by manufacturer, the technical toxaphene standard below is specifically from Hercules Incorporated in order to allow a subsequent comparison with the Hercules 009 Superfund site data. The estimated retention time window for the Hx-Sed and Hp-Sed toxaphene congeners, which are the main toxaphene congeners expected in anaerobic soil, occurs at the front edge of the technical toxaphene window. Notice that the Hx-Sed peak is to the left and taller than the Hp-Sed peak.

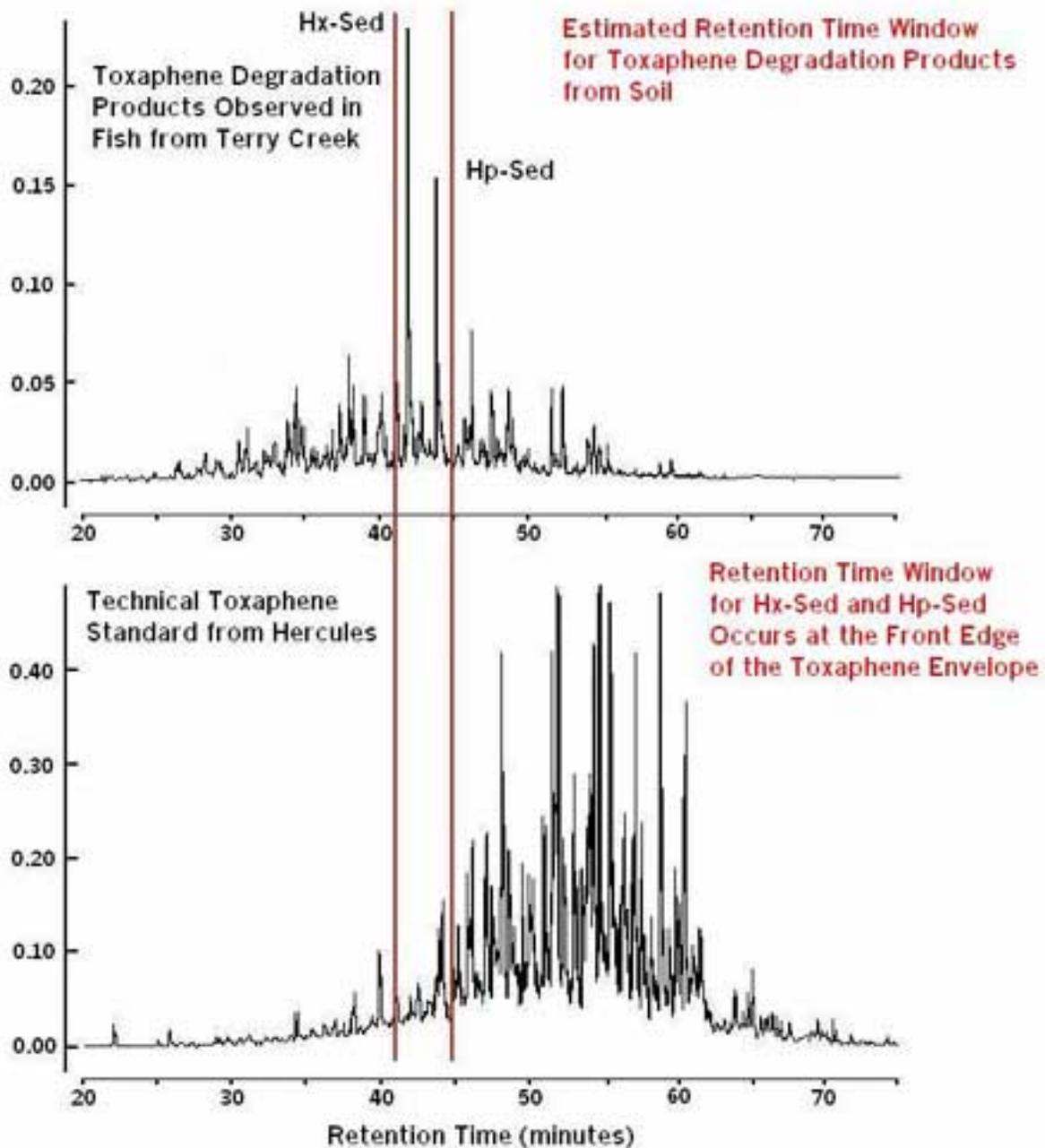


Figure 4: Estimated Retention Time Window for Hx-sed and Hp-sed

Hercules 009 GC/ECD Data Suggest Toxaphene Degradation Products May Be in the Groundwater

On January 8, 2003, the contractor for Hercules Incorporated, RMT Incorporated, provided EPA with the November 2002 groundwater sampling results, which were used in EPA's Hercules 009 Landfill 5-year review. RMT's subcontract laboratory (EnChem, Inc.) used EPA Method 8081A to analyze the toxaphene groundwater samples and reported nondetect (i.e., <5.2 micrograms per

liter (ug/L)) for all toxaphene results. Fortunately, the sampling results included a chromatogram for each of the groundwater monitoring wells. This allowed for the comparison of the Hercules 009 Landfill groundwater samples against the Hercules technical toxaphene standard to check for the possibility of toxaphene degradation products (Figure 5 below).

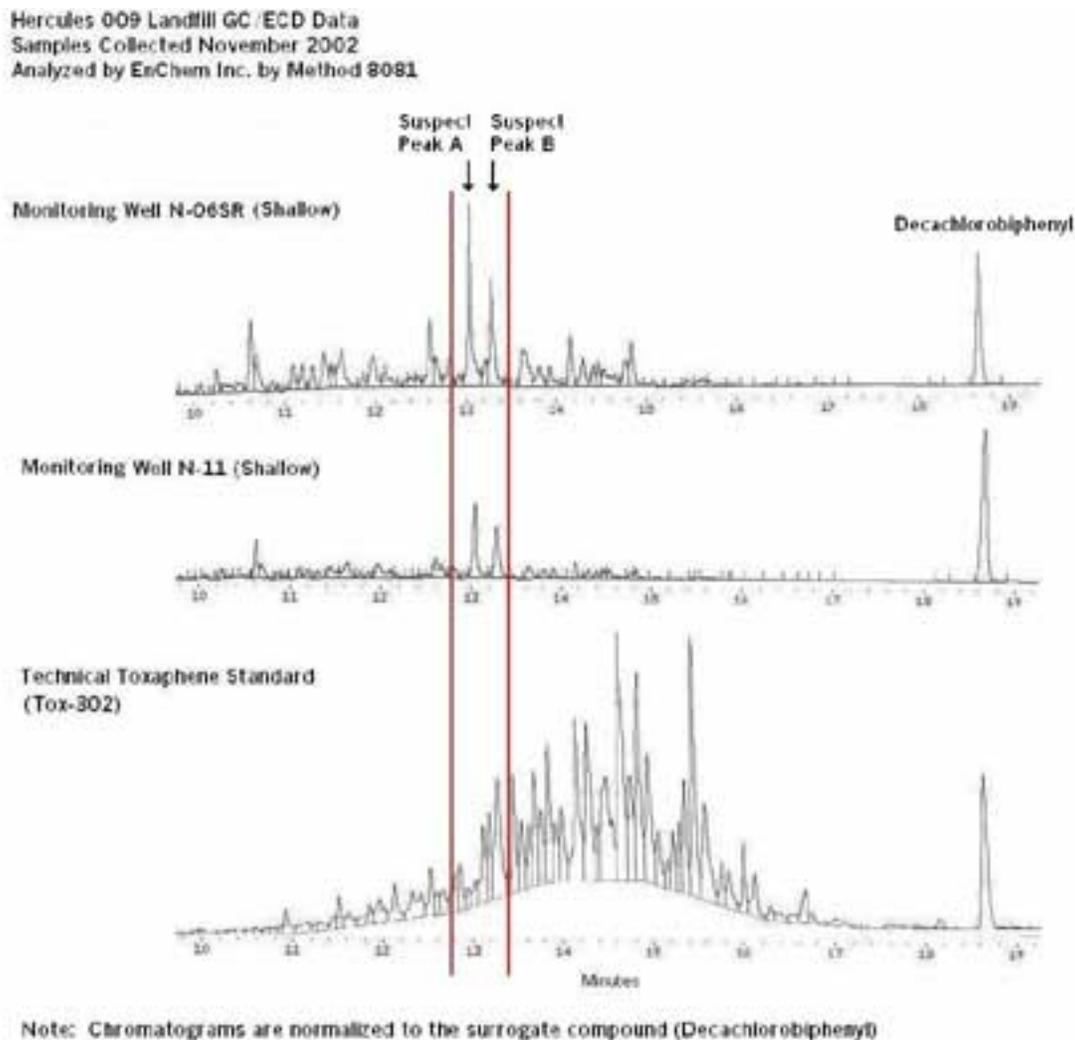


Figure 5: Potential Toxaphene Degradation Products in the Groundwater at Hercules 009 Landfill

As described in the previous section, the estimated retention time window for the Hx-Sed and Hp-Sed toxaphene congeners occurs at the front edge of the technical toxaphene window. When the estimated retention time window for Hx-Sed and Hp-Sed is superimposed on the chromatograms from monitoring wells N-06SR and N-11, two prominent peaks are present that resemble the Hx-Sed and Hp-Sed peak profile (i.e., the left peak is taller than the right peak). These chromatograms provide suggestive evidence that Hx-Sed and Hp-Sed might be present in the Hercules 009 Landfill groundwater. However, these peaks cannot be positively identified as toxaphene degradation products due to significant limitations in the data set. First, there are no Hx-Sed or Hp-Sed standards to establish their retention time, which is the key criterion for identifying compounds in a GC/ECD analysis (i.e., no standards; no identifications). Second, the critical weakness with all GC/ECD data is the lack of a mass spectrum that could be used to

determine the structure of the compound making each of these peaks. The limitations of this GC/ECD data set clearly show the value of NIMS analysis.

If the samples had been run by NIMS instead of GC/ECD, a quick review of the mass spectra for each of the peaks could easily determine if these peaks were toxaphene congeners. For example, the negative ion mass spectrum for Suspect Peak A could be compared against the negative ion mass spectrum of hexachlorobornanes (Figure 6(a)). Likewise, the negative ion mass spectrum for Suspect Peak B could be compared against the negative ion mass spectrum of heptachlorobornanes (Figure 6(b)). If the spectra matched, EPA could conclude that there were toxaphene degradation products in the groundwater. However, with only the GC/ECD data, a definitive determination on the identity of these suspect peaks cannot be made.

NIMS Can Definitively Determine the Identity of Suspected Hx-Sed and Hp-Sed Peaks

NIMS could be used to definitively determine the identity of the Suspect A & B peaks observed in the Hercules 009 Landfill GC/ECD data (see Figure 5). The retention time and mass spectrum for Suspect Peak A would be compared against the retention time and mass spectrum for Hx-Sed. The mass spectrum for Hx-Sed looks like the diagram in Figure 6(a). The retention time and mass spectrum for Suspect Peak B would be compared against the retention time and mass spectrum for Hp-Sed. The mass spectrum for Hp-Sed looks like the diagram in Figure 6(b). The additional feature of the NIMS technique of comparing and matching a peak's mass spectrum allows for the definitive identification of the peaks.

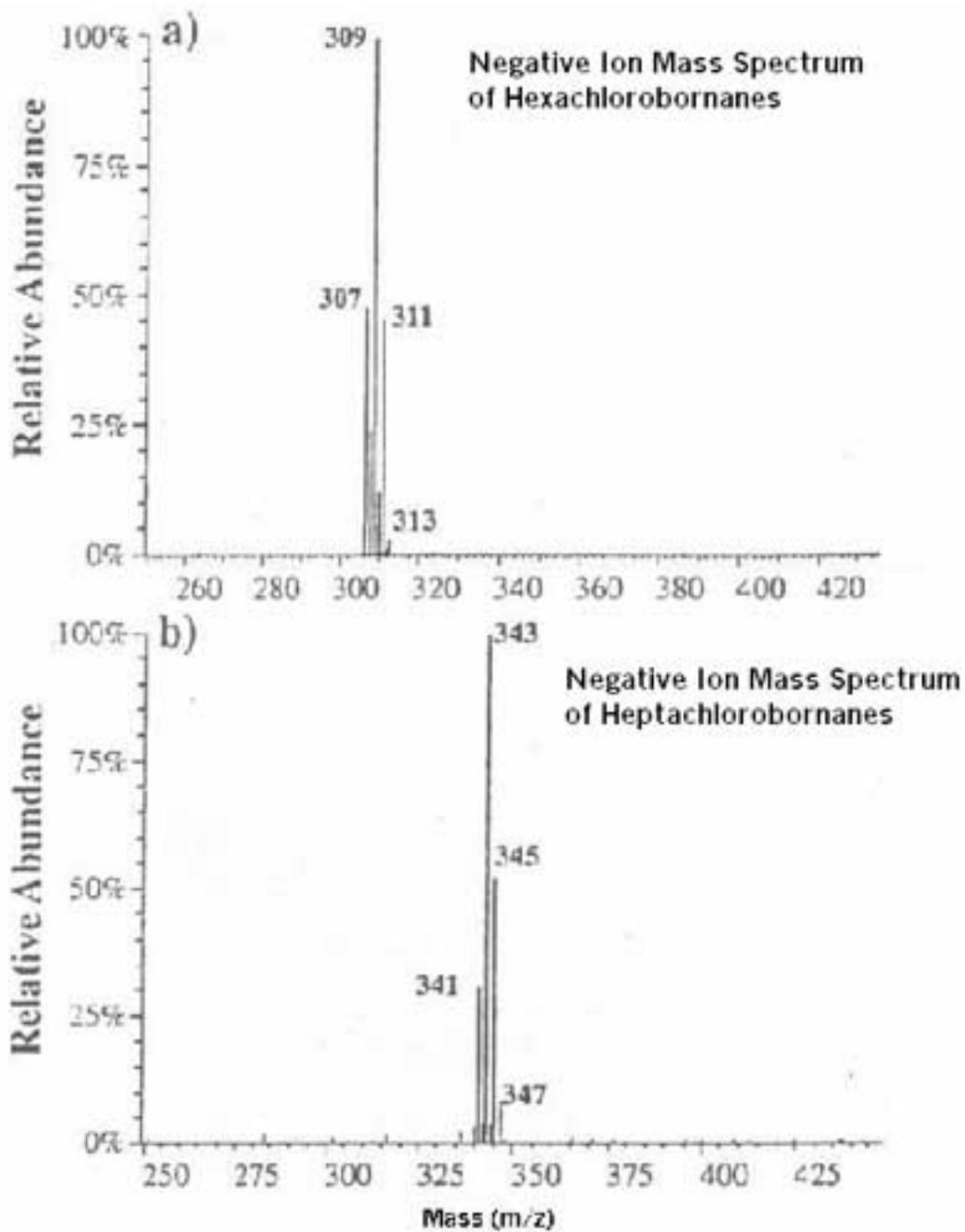


Figure 6: Negative Ion Mass Spectrums for Hexachlorobornane and Heptachlorobornane

Testing for Toxaphene Degradation Products in Our Nation's Drinking Water Supply

Since the 1991 promulgation of the National Primary Drinking Water Regulations (NPDWR) for the Phase II Synthetic Organic Compounds, EPA has required drinking water suppliers to test for toxaphene in the Nation's drinking water supply. The 1991 NPDWR for toxaphene approved the use of EPA Methods 505, 508, and 525.1. However, EPA's Performance Evaluation studies show laboratories most frequently use EPA Method 508 to determine toxaphene concentrations in drinking water (EPA, 2003a). As part of EPA's Six Year Review of NPDWR that was completed on July 18, 2003 (68 FR 42907), EPA collected occurrence data on toxaphene in the drinking water supplies from a representative cross-section of 16 States. These occurrence data represent over 52,000 analytical results, mostly from 1994 to 1997 for approximately 14,000 public water systems (PWSs) (EPA, 2002). EPA's analysis identified only 6 detections of toxaphene in 41,516 ground water samples and only 7 detections of toxaphene in 10,913 surface water samples (EPA, 2003b, Table B.53.b). EPA concluded that no PWSs are expected to exceed EPA's Maximum Contaminant Level (MCL) of 3 ug/L for toxaphene.

Unfortunately, EPA Method 508 shares the same problem described above for EPA Method 8081 used in EPA's hazardous waste program. EPA Method 508 uses the same GC/ECD analytical instrumentation and, likewise, only identifies technical toxaphene through pattern recognition against a technical grade toxaphene standard. EPA Method 508 does not detect or report the potential presence of toxaphene degradation products in the water sample. Therefore, EPA's toxaphene occurrence data from PWSs should only be interpreted to mean that no technical toxaphene is expected to be found exceeding EPA's MCL of 3.0 ug/L.

EPA's toxaphene occurrence data from PWSs do not address the possible contamination of the PWSs by toxaphene's degradation products. Volder and Li estimate at least 1.3 million tons of toxaphene were released into the total global environment from 1950 to 1993 (Volder, 1993). In the United States, toxaphene has been weathering from at least 1982 when most agricultural uses were stopped by the EPA. Decades of microbial degradation of this technical toxaphene should have converted the majority of the original technical toxaphene mixture into a mixture of its degradation products. Therefore, any current potential toxaphene contamination of the Nation's drinking water supplies is not from the original technical toxaphene mixture, but from toxaphene's degradation products. Since toxaphene degradation products have a lower level of chlorination than technical toxaphene, the degradation products should be more water soluble and, thus, potentially more mobile than the original technical toxaphene. Thus, EPA needs to definitively evaluate the possibility that the Nation's ground water and/or surface drinking water supplies could have become contaminated by toxaphene's degradation products. Such an evaluation would require testing at representative PWSs with an EPA-approved congener-specific NIMS method.

Need Congener-Specific Testing and Congener-Specific Health Risk Information to Implement Accurate Fish Advisories

As previously identified, the major route of human exposure to toxaphene degradation products is through consuming contaminated fish. Therefore, the need to issue accurate and timely fish advisories is critical to protecting human health.

EPA's fact sheet on toxaphene fish advisories (EPA, 1999) states that toxaphene analysis, similar to PCB analysis, can be conducted to identify the presence of individual or specific congeners. However, the fact sheet also states that there are no standardized congener-specific methods or EPA-approved congener-specific methods for toxaphene at this time. Therefore, EPA recommends the analysis of total toxaphene until further development of congener-specific analyses. However, the lesson learned from the 1997 GA/DNR study at Terry Creek was that total toxaphene analyses can completely fail to detect degraded toxaphene in fish. A subsequent congener-specific NIMS analytical technique performed by Skidaway Institute of Oceanography was able to definitively identify and quantify individual toxaphene congeners present in the same Terry Creek fish extracts at concentrations up to 1,420 ppb. This event clearly shows the need for implementing an EPA-approved congener-specific toxaphene analysis to identify toxaphene contamination and to support subsequent health risk decisions such as fish advisories.

EPA's fact sheet on toxaphene fish advisories (EPA, 1999) also recommends fish consumption limits based on EPA's default risk assessment parameters for technical toxaphene. The reference dose (RfD) for technical toxaphene is used to calculate the noncancer health endpoint, while the cancer slope factor for technical toxaphene is used to calculate the cancer health endpoint. Unfortunately, using the toxicity of technical toxaphene is not an appropriate basis for two reasons. First, humans are only exposed to a subset of toxaphene congeners (i.e., the degradation products found in fish which are dominated by p26 and p50) and not to the full distribution of toxaphene congeners found in technical toxaphene. Second, the toxicity of each individual toxaphene congener can be expected to vary significantly from the toxicity observed from the exposure to the original technical toxaphene mixture. Therefore, EPA's use of technical toxaphene's RfD and cancer slope factor to quantify the risk from toxaphene degradation products in fish should at best be considered only an estimation. Thus, EPA needs to determine the toxicity of the persistent toxaphene degradation products found in fish (e.g., p26, p50) in order to accurately determine the potential risk to human health.

Technical Summary of Toxaphene Issue

EPA should recognize that toxaphene degrades in the environment and that all of EPA's toxaphene data collected using EPA Methods 8081 and 508 are inadequate to screen for toxaphene's degradation products. To address this problem, EPA should test toxaphene contamination using a congener-specific analytical method such as NIMS. EPA's validation and standardization of the NIMS method would facilitate evaluating toxaphene degradation products in the environment. EPA should recognize that the chronic health risk to humans is from the five persistent toxaphene congeners (i.e., p26, p50, p40, p41, and p44) that accumulate in the human body. EPA needs additional studies on the carcinogenicity and embryotoxicity of these five persistent toxaphene congeners to accurately evaluate the risk they pose to humans. Without congener-specific laboratory results and without knowing the toxicity of specific congeners, EPA is unable to definitively quantify the risk to human health posed by the toxaphene degradation products left in the environment and the food chain.

OIG Technical Conclusions

- The original “technical” toxaphene mixture degrades in the environment.
- The chronic health risk to humans is from exposure to toxaphene’s persistent degradation products (e.g., p26, p50, p40, p41, p44) and not the original technical toxaphene mixture.
- EPA needs to use a congener-specific analytical method to positively identify and quantify toxaphene degradation products in the environment. The OIG recommends standardizing and validating the NIMS method and inserting an approved EPA NIMS method into SW-846 and the water program’s testing methods.
- EPA needs to conduct specific research into both the carcinogenicity and embryotoxicity of the five persistent human toxaphene congeners (i.e., p26, p50, p40, p41, and p44) in order to develop acceptable human exposure limits to the individual congeners and/or to the mixture of these five congeners.

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Superfund Sites Listing Toxaphene as a Contaminant of Concern

EPA Identifier	Site Name	City	State
ALD007454085	T.H. Agriculture & Nutrition Co. (Montgomery Plant)	Montgomery	AL
CA5570024575	Travis Air Force Base	Travis AFB	CA
COD980499248	Lowry Landfill	Aurora	CO
COD980717953	Sand Creek Industrial	Commerce City	CO
FLD004092532	Stauffer Chemical Co (Tampa)	Tampa	FL
FLD053502696	Helena Chemical Co. (Tampa Plant)	Tampa	FL
FLD981021470	Wingate Road Municipal Incinerator Dump	Fort Lauderdale	FL
GAD003269578	Woolfolk Chemical Works, Inc.	Fort Valley	GA
GAD042101261	T.H. Agriculture & Nutrition Co. (Albany Plant)	Albany	GA
GAD980556906	Hercules 009 Landfill	Brunswick	GA
GAD991275686	Marzone Inc./Chevron Chemical Co.	Tifton	GA
NCD980843346	Aberdeen Pesticide Dumps	Aberdeen	NC
NCD981475932	FCX, Inc. (Washington Plant)	Washington	NC
NCD981927502	Geigy Chemical Corp. (Aberdeen Plant)	Aberdeen	NC
NJD064263817	Syncon Resins	South Kearny	NJ
SCD058753971	Helena Chemical Co. Landfill	Fairfax	SC

Agency Response to the Draft Report



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 26 2005

OFFICE OF THE
ADMINISTRATOR

MEMORANDUM

SUBJECT: EPA Response to OIG Draft Ombudsman Report, "More Information Is Needed On Toxaphene Degradation Products," Assignment 2004-1124

FROM: Marcus Peacock 
Deputy Administrator

TO: Nikki L. Tinsley
Inspector General

Purpose

The purpose of this memorandum is to provide EPA comments on the Office of Inspector General (OIG) Draft Ombudsman Report, "More Information Is Needed On Toxaphene Degradation Products," Assignment 2004-1124.

Background/Discussion

The OIG has requested several EPA offices (OW, OSWER, OPPTS and ORD) to review the draft report dated August 12, 2005 entitled, "More Information Is Needed On Toxaphene Degradation Products: (OIG Assignment 2004-1124). The report describes the limitations of some EPA analytical methods for determining the insecticide toxaphene, and the lack of information on potential adverse health effects of toxaphene. EPA is urged to develop more sensitive and selective methods, and conduct more studies on the health effects of certain toxaphene degradates.

The various EPA Offices appreciated the opportunity to respond to this draft report. In general, EPA concurs with the recommendations. Attached are detailed comments from OSWER, OW and ORD. OPPTS was consulted and did not submit any comments. If your staff has any additional questions, please have them contact the following Special Assistants in the Office of the Administrator, Doreen Vetter at 564-1509 or Sarita Hoyt at 564-1471.

Attachment

cc: William Farland
Tom Dunne
Ben Grumbles
Susan Hazen
Dianne Bazzle
Patrice Kortuem

**EPA Comments on OIG Draft Ombudsman Report
More Information Is Needed on Toxaphene Degradation Products
Assignment 2004-1124**

OFFICE OF RESEARCH AND DEVELOPMENT

1. On page 7, paragraph 3, the draft report states:

2. We recommend that the Administrator direct the Assistant Administrators for Research and Development, for Water, and for Solid Waste and Emergency Response to arrange for specific research into the dangers of tumors (i.e., cancer) and of harm to embryos posed principally by toxaphene degradation products p26, and p50, and perhaps by p40, p41, p44, and p62.

RESPONSE: We request the following change to this portion of the draft report:

2. We recommend that the Administrator direct the Assistant Administrators for Research and Development, for Water, and for Solid Waste and Emergency Response to arrange for specific research into the dangers of tumors (i.e., cancer) and of harm to embryos posed principally by a mixture of toxaphene congeners and metabolites found in fish.

Discussion: With respect to cancer and developmental effects, any future studies should focus on all congeners (Parlars 26, 40, 41, 44, 50, 62) and the two congeners (Hx-Sed and Hp-Sed) that are originally present in technical toxaphene and increase greatly as a result of reductive dechlorination. Hence, any chronic bioassays that are designed for both cancer and developmental studies should include a mixture of all congeners that are present in fish and not individual congeners since humans will be consuming fish and not individual congeners.

2. On pages A-18 and A-19, we noted several issues with reference citations:

AG

Most references include author initials but a few (e.g., Braekevelt and Calciu) list the author's first name.

References with multiple authors are cited in text as single authors (e.g., Maruya, 2001 or De Geus, 1999). They should be cited in text as "Maruya et al., 2001" or "De Geus et al., 1999."

There are two Maruya et al., 2001 references but they are not differentiated with "a" and "b". There is no way for the reader to tell which reference is being cited.

Fiolet and van Veen do not list any author initials at all. This reference is also misplaced alphabetically (should follow Fingerling et al.).

Some journal titles are abbreviated but others aren't. The Smalling et al. citation doesn't include the journal title at all. Some cite "Vol." or "vol." and some just have the volume number alone. Some have "#" in front of the issue, others cite the issue number inside parentheses.

Most references capitalize all major words in the title but a few of them don't. Sometimes the year is cited before the volume/page numbers and sometimes after. The FAIR CT PL.96.3131 reference doesn't cite any year at all.

3. Overview Comments

Background: We have been involved in analytical methodology for about 30 years including most forms of chromatography, mass spectrometry, sample handling, and cleanup techniques. Two papers were published (see below: Brumley et al, 1993 and 1998) on the application of electron capture negative ion mass spectrometry (ECNIMS) including the toxaphene application as well as the related chlordane application. The negative ion approach has been around over 30 years and we have been involved in it since its very early stages.

Comments: The draft report presents certain recommendations concerning the analytical methodology used to determine toxaphene in real samples and other recommendations concerning toxicology of toxaphene. Our comments are restricted to the analytical chemistry aspects.

The analytical chemistry recommendations concern issues of toxaphene degradation and perceived deficiencies in the analytical methodology and a recommendation to change to the ECNIMS methodology as is currently performed throughout many parts of the world. ECNIMS has been in existence for decades and ORD has supported its inclusion in the tool kit of EPA chemists by generating the publications cited above. However, we have no official methods that use chemical ionization mass spectrometry at all, positive or negative ion. We have no GC/GC/MS or GC/MS/MS methodologies in place. We have no LC/MS methodology in place that uses ESI. Rather we have a methodology that uses Thermospray Ionization, a technique that few if any laboratories still retain in their instruments.

In the particular case of the toxaphene issue here, we support the recommendation to pursue modern methods involving ECNIMS. The complementary and screening use of GC/ECD is highly recommended along with the inclusion of the degradation products in the methodology. Cases of positive samples or indeterminate samples can be submitted for GC/ECNIMS as needed to support the findings. The basic finding of the draft report is that the science as currently practiced in this analysis is inadequate to do the task that needs to be done. We concur in this conclusion.

One issue concerns the availability of instrumentation to carry out ECNIMS. This capability is included in many instruments along with EI (Agilent instruments, for example) if the option is selected. One difficulty is that an ion source changeover is often required which is a day of down time because of equilibration and gas purging. This may be reduced on recent instruments capable of a more rapid switchover. It does imply that production laboratories would probably keep a dedicated instrument for this technique, depending on sample load. The technique is reliable, reproducible, quantitative, and practical so that misinformation that has been circulated in the past about ECNIMS should be disregarded. It is obvious that laboratories in the U.S. and throughout the world are able to perform this technique without difficulty.

Citations:

W. C. Brumley, C. M. Brownrigg, and A. H. Grange, "Determination of Toxaphene in Soil by Electron Capture Negative Ion Mass Spectrometry After Fractionation by High Performance Gel Permeation Chromatography," J. Chromatogr., 633, 177-183 (1993).

W. C. Brumley, E. Latorre, V. Kelliher, A. Marcus, and D. Knowles, "Determination of Chlordane in Soil by LC/GC/ECD and GC/EC NIMS with Comparison of ASE, SFE, and Soxhlet Extraction," J. Liq. Chromatogr., 21, 1199-1216 (1998).

OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE

ASSESSMENT AND REMEDIATION DIVISION: OSRTI agrees with the conclusion that research is needed in reproductive, mutagenic, and carcinogenic toxicity of toxaphene degradation products. However, the decision to fund this specific research should be balanced against other research needs of the Superfund program.

OFFICE OF SUPERFUND REMEDIATION AND TECHNOLOGY INNOVATION

The IG report recommends that we validate and use a particular method for testing for toxaphene degradation products. It also recommends that EPA address risk assessment related issues.

Background: The Analytical Services Branch (ASB, within Superfund) typically does not consider the kinds of issues discussed in this report (science, policy and research questions that address risk and method validation). We generally do provide services to site managers that are well established and frequently requested. As a result, from an ASB perspective, these recommendations do not affect us directly. The current Contract Lab Program does not have the capability to run the recommended analyses, nor do our non-routine analytical services contracts. However, should site managers care to request these new analyses, we might assist in finding contract vehicles that could provide these services in a cost effective manner. At the current time, in order for Remedial Project Managers or On-Scene Coordinators to conduct these kinds of analyses (or other more innovative kinds of methods), they would need to establish task orders with labs using the RAC, START or other regional contract vehicles. As a result, ASB is neutral in our reaction to these recommendations.

Discussion: However, we do have the following additional thoughts (which are touched on in this report):

Before a site manager or OSC would order this kind of work, they would need confirmation that levels of these degradation products in the environment present health (or environmental) risks of concern to our Superfund communities. This would argue that the risk questions be addressed first. Addressing the risk (associated with levels in the environment) will in part then drive the requirements for the methods.

Secondly, while the proposed method may be a reasonable means to improve recognition of the specific degradation products, it is not clear from the report whether alternative approaches have also been evaluated. It may be more cost effective (for the cleanup industry, broadly speaking) for EPA to identify methods that can be run utilizing the kinds of equipment currently available at many commercial environmental labs.

OFFICE OF SOLID WASTE

General Comments:

- While OSW concurs with the OIG Ombudsman findings and recommendations, we have some issues and concerns regarding the presentation of technical discussions which result in some incorrect statements in the report, which we will clarify in the specific comments.
- Also there appear to be some technical contradictions in statements addressing the comparison of applicability between the GC/ECD methods and the NIMS method in the sections of Appendix A.
- With the promulgation of the Methods Innovation Rule on June 14, 2005 (70 FR 34537, June 14, 2005), OSW removed the final barriers to completely allowing the use of the performance-based measurement system (PBMS) for RCRA analyses. Under PBMS, any appropriate method may be used, whether it is published in SW-846 or is from an alternative source, provided that it can be demonstrated to generate data of known and appropriate quality that can be used for its intended application. Under the PBMS paradigm, a NIMS method that can be validated for a site-specific application may be used for analyzing toxaphene degradation products for RCRA applications.
- The problems encountered with the data generated from the GC/ECD methods, (e.g., Method 8081), are not because of the method's lack of capability, but of inappropriate application of the method in the project planning process. If toxaphene degradation products are not included or requested as target analytes in the planning documents, it does not matter whether you use GC/ECD or NIMS for the analysis. These analytes will not be reported in either case.
- An additional finding and recommendation should be that "Toxaphene degradation products should be included as target analytes for analyses at toxaphene-containing sites."
- OSW agrees that the NIMS methodology would make for easier definitive identification of toxaphene degradation products and any other organochlorine pesticides than would GC/ECD because of the enhanced analyte identification capabilities of the mass spectrometer.

Specific Comments:

- At a Glance, pg. 3 of 35: In the third sentence beginning with "The analytical methods...", "are not designed to identify" should be changed to "are not normally used to identify". If toxaphene degradation products were identified as target analytes and standards obtained for them during the project planning process, then the existing ECD methods could be used to identify these degradation products. However, the results will not be produced nor reported unless specific actions to include them in the analytical planning process are done.
- Section "A Different Analytical Method Is Needed...", pg. 5: In the first sentence, please change "...do not evaluate..." to "... are not normally used to evaluate..." Please add the following to the end of the second sentence: "...mixture, 'but have not been formally validated for toxaphene degradation products'".

- Please change the title of the Topic on pg. A-8 from “EPA Method 8081 Does Not Identify Toxaphene Degradation Products” to “EPA Method 8081 Is Not Normally Used to Identify Toxaphene Degradation Products”. Figure 3A is an excellent GC/ECD chromatogram which shows clearly identified peaks for the toxaphene degradation products, Hx-Sed and Hp-Sed. Use of an appropriate standards chromatogram for comparison would result in valid qualitative and quantitative identification of these compounds by GC/ECD, which directly contradicts the statements in this section to the contrary.
- The comparison discrepancies reported on pg. A-9 between the NIMS results and the Method 8081 results were not primarily due to differences in the analytical capabilities of the methods, but due to differences in reporting requirements with respect to which compounds were actually target analytes for the application of each method. The key advantage of the NIMS method over GC/ECD for single component or congener-specific analytes is the direct definitive identification that mass spectrometry provides. Use of a non-specific GC detector, such as ECD, requires an additional confirmation step to complete the compound identification.
- On pg. A-10, in the first sentence of the Section “Gas Chromatograph/Negative Ion Mass Spectrometry Can ...”, please add the following wording, “...NIMS can definitively ‘and directly’ identify and measure...”

OFFICE OF WATER

Background

The Office of the Inspector General (OIG) has asked several EPA offices to review a draft report dated August 12, 2005 and titled More Information Is Needed On Toxaphene Degradation Products (OIG Assignment 2004-1124). The authors of this draft report describe limitations of some EPA analytical methods for determination of the insecticide toxaphene, and the lack of information on potential adverse health effects of toxaphene. The authors urge EPA to develop more sensitive and selective methods, and conduct more studies on the health effects of certain toxaphene degradates. The Office of Water, which has the responsibility for monitoring pollutants in water, is responding to the recommendations for development of better methods for toxaphene. We have identified two EPA analytical methods that can measure toxaphene degradates in water.

Discussion

Toxaphene is a complex mixture of over 200 very similar chlorinated compounds known as toxaphene congeners. Congeners differ in the number and location of chlorine atoms. In a water or soil environment the relative proportions of the individual chlorinated congeners change (i.e. weathers or degrades) as the original mixture loses chlorine. The authors note that some EPA methods do not measure seven specific toxaphene congeners that have been identified at a Superfund site in Georgia. They refer to these congeners as "degradation products", and recommend that EPA approve a method that uses a negative ion mass spectrometry (NIMS) technology to determine these products. We have evaluated this technology, and agree that it could provide another sensitive method for determination of individual toxaphene congeners. However, in addition to approved non-mass spectrometry (MS) methods EPA 508 and 608 that only determine toxaphene as mixtures of congeners, MS methods (EPA 525.2 and 1625) are capable of determining low levels of specific congeners.

Prof. Ronald Hites of Indiana University developed a NIMS method (Anly. Chem. 59, 913-917; 1987) for ORD that later was used in Region 5 to measure toxaphene degradation products in Great Lakes' sediment (J. Great Lakes 25(2): 383-394; 1999). This is the method which the authors of the OIG report attribute to a European source. Although this NIMS method will not provide a major increase in selectivity relative to the EPA MS methods, it may provide better sensitivity in "dirty" samples because interferences often do not easily ionize in the negative ion mode. The NIMS method is available for use and has been used in the Great Lakes Program though it has not yet been fully validated by EPA or published in the Federal Register.

Toxaphene is of environmental interest, but the use and production of toxaphene has been banned since 1990. Our present chemical method development efforts are fully focused on developing robust methods for determinations of complex classes of pollutants that are used in increasing amounts, and transported into our waterways. These pollutants include personal care products, pharmaceuticals, currently registered pesticides (and degradates), and other emerging pollutants. Although validation of additional methods for toxaphene is not an Office of Water priority, we are available for questions about application of the NIMS method, or our EPA MS methods to measurements of toxaphene congeners in the environment.

OIG Technical Comments on the Agency Response

OIG Draft Recommendation 1:

We recommend that the Administrator direct the Assistant Administrators for Water and for Solid Waste and Emergency Response to:

- a. Develop, validate, and approve the gas chromatograph with negative ion mass spectroscopy method to analyze toxaphene degradation products, especially p26, p40, p41, p50, p62, Hx-Sed, and Hp-Sed, and
- b. Use the new method to analyze environmental samples in their programs.

OIG Technical Comments on EPA's Response:

We agree with the comments provided by EPA's Office of Research and Development (ORD) concerning using the gas chromatograph/negative ion mass spectrometry (NIMS) method for detecting and documenting environmental contamination by toxaphene degradation products. Specifically, we want to highlight and comment on the following points in ORD's response:

- ORD states that EPA has no official NIMS method and supports including the NIMS method into EPA's "tool kit." We agree with ORD that the NIMS needs to be approved as an EPA method so that the method is readily available to EPA staff and the regulated community to evaluate and test for degraded toxaphene in the environment.
- ORD states that "... the science as currently practiced in the analysis [of toxaphene] is inadequate to do the task that needs to be done." This is consistent with our position that technical toxaphene degrades in the environment and the current use of EPA's GC/ECD method does not adequately detect potential human exposure to toxaphene's degradation products left in the environment.
- ORD states that "The [NIMS] technique is reliable, reproducible, quantitative, and practical..." We also found this to be true about the NIMS technique; no technical or practical issues prevent EPA programs from using NIMS.

We have the following comments regarding the response from the Office of Solid Waste and Emergency Response (OSWER):

- The Analytical Services Branch (ASB) within the Superfund program indicates that ASB has a "neutral" opinion on the development, validation, and approval of a NIMS method. ASB indicates it is up to the Remedial Project Manager (RPM) and On-Scene Coordinators (OSC) to conduct these "...more innovative kinds of methods." In our opinion, it is impractical to expect RPMs and OSCs to have the necessary laboratory

skills, time, and resources to develop, validate, and implement the “innovative” NIMS on a site-specific basis. RPMs and OSCs will probably continue to choose an already approved EPA method (e.g., Method 8081) from EPA’s pre-existing “tool kit” of analytical methods (even though it is not exactly what is needed), rather than validate a new NIMS method themselves.

- ASB’s comments do not address the problem of evaluating for toxaphene degradation products at Superfund sites being addressed by potentially responsible parties (PRP), which are the majority of Superfund sites. PRPs are reluctant to use an unapproved EPA method, because EPA may not accept the validity of the data from the unapproved method. Analogous to RPMs and OSCs, PRPs would prefer to continue to choose an already approved EPA method (e.g., Method 8081) to evaluate for degraded toxaphene at a Superfund site rather than have to validate an unapproved NIMS method. Hence, we insist that EPA validate and approve the NIMS method to facilitate its use by RPMs, OSCs, and PRPs instead of each user having to separately validate the NIMS method each time it is used.
- ASB expresses concern that the analytical equipment at commercial analytical laboratories is not capable of running the NIMS method. To the contrary, we found that most commercially available gas chromatograph-mass spectrograph instruments (e.g., Agilent instruments – f.n.a. Hewlett-Packard) have the capability to run the NIMS method (i.e., a lab would need to purchase the chemical ionization option for the instrument). This equipment issue is directly addressed in ORD’s comments. Due to configuration issues with the hardware of a gas chromatograph-mass spectrograph, we agree with ORD’s opinion that a commercial laboratory would probably have to dedicate a single instrument for the NIMS analyses.
- The Office of Solid Waste (OSW) indicates that the analytical procedures specified in EPA Method 8081 were not designed or validated to analyze for toxaphene degradation products. However, OSW indicates that the GC/ECD analytical technique used in EPA Method 8081 could be developed to detect toxaphene degradation products (e.g., add individual toxaphene congeners as target compounds and use the appropriate toxaphene congeners as standards). We concur with OSW that EPA Method 8081 was never designed or validated to detect degraded toxaphene. Furthermore, we conceptually agree that the GC/ECD technique could be developed to detect toxaphene degradation products, but we do not advocate this course of action because the compound identification by the GC/ECD technique is inherently inferior to the compound identification by GC/NIMS due to the presence of a mass spectrum for identifying the peaks.
- OSW indicates the problems encountered with detecting toxaphene degradation products by EPA Method 8081 were due to inappropriately applying EPA Method 8081 during the project planning process. We agree that EPA Method 8081 should not be used to evaluate for degraded toxaphene products in the environment (i.e., EPA Method 8081 does not list individual toxaphene congeners as target compounds). However, we stress that EPA’s project planning process at Superfund sites needs to recognize that technical

toxaphene degrades in the environment and that NIMS is the best available method to detect and identify the extent of degraded toxaphene.

- OSW states that under the performance-based measurement system (PBMS) for RCRA analyses, any method (EPA approved or not) can be used "... provided that it can be demonstrated to generate data of known and appropriate quality ..." Therefore, OSW defers to the site managers to validate the method for each site-specific application. As with the Superfund program, in our opinion, the expectation that site managers have the necessary laboratory skills, time, and resources to develop, validate, and implement the "innovative" NIMS on a site-specific basis is impractical. As a result, site managers will probably continue to choose an already approved EPA method (e.g., Method 8081) from EPA's pre-existing "tool kit" of analytical methods (even though it is not exactly what is needed), rather than validate a new NIMS method themselves.
- OSW suggests the following additional recommendation: "Toxaphene degradation products be included as target analytes for analyses at toxaphene-containing sites." We agree with this suggestion and have incorporated similar language into recommendation 1b.
- OSW states that "... the NIMS would make for easier definitive identification of toxaphene degradation products and any other organochlorine pesticides than would GC/ECD because of the enhanced analyte identification capabilities of the mass spectrometer." We agree with OSW that NIMS' superior identification capabilities are needed to clearly identify individual congeners from such a complex mixture of congeners and other non-toxaphene peaks found in environmental samples.

We had the following comments regarding the response from the Office of Water (OW):

- OW's response indicates that the NIMS method only provides another sensitive method for the determination of individual toxaphene congeners. Specifically, OW states that "... MS [mass spectrometry] methods (EPA 525.2 and 1625) are capable of determining low levels of specific congeners." We disagree with OW's assessment of the value and utility of the existing methods. EPA Methods 525.2 and 1625 use electron ionization mass spectrometry that is inherently less sensitive than existing methods that use gas chromatography with electron capture detectors, i.e., EPA Methods 508 and 608. The NIMS method is the only practical mass spectrometry method that has the same sensitivity as the GC/ECD methods. EPA method 525.2 lists only toxaphene (a.k.a., technical toxaphene) as a target compound. Also, EPA method 525.2 does not identify individual toxaphene congeners. Furthermore, EPA method 1625 does not even list toxaphene as a target compound for the analysis.
- OW's response does not address the continued testing of drinking water for toxaphene at public water systems, which mostly use EPA's GC/ECD Method 508. These resulting data can only be interpreted to mean that no technical toxaphene is in our Nation's drinking water. Since toxaphene has been banned since 1990 and is known to degrade in the environment, one would not expect to find technical toxaphene in our Nation's

drinking water, but would expect to find environmentally degraded toxaphene in the water. Therefore, OW's 1991 National Primary Drinking Water Regulations requiring public water systems to continue testing for technical toxaphene wastes the time and resources of public water systems. OW needs to approve and use the NIMS method to evaluate our Nation's drinking water for possible contamination by degraded toxaphene.

In conclusion, after considering EPA's response, we are committed to having EPA approve and use the NIMS to evaluate for degraded toxaphene in the environment. Furthermore, based on EPA's response, we believe that recommendation 1b needs to be revised to require EPA to evaluate sites that are known to have contained technical toxaphene to be evaluated for the presence of toxaphene degradation products by the NIMS method.

OIG Draft Recommendation 2:

We recommend that the Administrator direct the Assistant Administrators for Research and Development, for Water, and for Solid Waste and Emergency Response to arrange for specific research into the dangers of tumors (i.e., cancer) and of harm to embryos posed principally by toxaphene degradation products p26, and p50, and perhaps by p40, p41, p44, and p62.

OIG Technical Comments on EPA's Response:

We agree with the comments provided by EPA's ORD concerning the research into the human toxicity of toxaphene degradation products. ORD requests revising the wording of the first recommendation from "...posed principally by toxaphene degradation products p26, and p50, and perhaps by p40, p41, p44, and p62" to "...posed by a mixture of toxaphene congeners and metabolites found in fish." We concur with this wording change. Since the vast majority of human exposure is through eating fish, the wording change allows ORD to assess the toxicity and characterize the risk from the degradation mixture to which humans are most exposed. Furthermore, the wording change still allows ORD to study the toxicity of the individual degradation congeners that are poorly metabolized and not readily excreted from the body (i.e., p26 and p50). In short, the wording change allows ORD more flexibility in studying the toxicity of toxaphene degradation products.

We disagree with the comments provided by OSWER's ASB that the health risks from toxaphene degradation products should be addressed before developing and implementing the NIMS method. Our opinion is that the NIMS methodology is already being successfully implemented by the European Union and would require only a minimum amount of effort and resources to be validated and approved by EPA. The immediate need for an EPA-approved NIMS method is clearly demonstrated by Skidaway Institute of Oceanography's successful use of the NIMS in 2001 to document high concentrations of toxaphene degradation congeners in fish near the Terry Creek Superfund site in Brunswick, GA. By contrast, the research needed to characterize the human health risks posed by toxaphene degradation products is anticipated to take about 6 years to complete.

EPA OW's response did not specifically address the need to research the human toxicity of toxaphene degradation products. OW's MCL for toxaphene in drinking water is 3.0 ug/L. This is the regulatory limit for the acceptable human exposure to technical toxaphene in drinking water. However, since toxaphene has been banned since 1990 and is known to degrade in the environment, human exposure in our Nation's drinking water would currently be to degraded toxaphene, and not to technical toxaphene. Therefore, in our opinion, due to the lack of potential exposure to technical toxaphene in our Nation's drinking water, the OW's MCL for technical toxaphene is outdated. However, since toxaphene was a heavily used pesticide in the United States, there is a potential human exposure to toxaphene degradation products in our Nation's drinking water. Therefore, OW should be interested in ORD's research into the toxicity of toxaphene degradation products because OW will need the research if it becomes necessary to establish a health effects limit for toxaphene degradation products in drinking water.

In conclusion, after considering EPA's response, we will incorporate ORD's revised wording into the second recommendation.

Distribution

Office of the Administrator
Assistant Administrator for Solid Waste and Emergency Response
Assistant Administrator for Water
Assistant Administrator for Research and Development
Regional Administrator, Region 4
Audit Coordinator, Office of the Administrator
Audit Coordinator, Office of Solid Waste and Emergency Response
Audit Coordinator, Office of Water
Audit Coordinator, Office of Research and Development
Audit Coordinator, Region 4
Director, Waste Management Division, Region 4
Director, National Center for Environmental Assessment, Cincinnati
RCRA National Organic Methods Program Coordinator
Director, Office of Superfund Remediation and Technology Innovation
Agency Followup Official (the CFO)
Deputy Chief Financial Officer
Agency Followup Coordinator
Associate Administrator for Congressional and Intergovernmental Relations
Associate Administrator for Public Affairs
General Counsel
Inspector General

From: [Dorothy Gilbert](#)
To: [City Clerk Dept](#); [Gayle McLaughlin](#); [Demnlus Johnson](#)
Subject: Public Comment--Open Session Prior to Closed Session
Date: Tuesday, January 26, 2021 1:07:52 PM

Dear City Council Members:

First of all, congratulations on your election. Some of you know that I have supported you for years. Welcome to the newest member.

As a Richmond homeowner for over 20 years, I have long been deeply concerned about the toxic state of this area and the plans to have major development on it. It is a US EPA Superfund-qualified site. Plans were once put forth to blow this toxic soil due east onto my area of the Annex, where I and my neighbors live. While that idea was abandoned, there are still, or again, plans to build on an area so contaminated that discussion seems to go back and forth about whether the first floor of a projected building can be inhabited, and whether sports and children's activities will be safe. The plan discussed by the former Council, to pave over the contaminated area, will not work. Without doubt we are going to have sea level, Bay level, rise; liquefaction of the soil will almost certainly occur; and certainly the heavy toxins will spread, into nearby coastal areas and into the Bay. We cannot have this happen. Please, say no to this very foolish, dangerous project!

I might add that a community of 4,000 living spaces, so close to an already seriously overcrowded freeway, is a bad idea in any case.

Thank you all very much for your time and attention.
All good wishes,
Dorothy Gilbert

From: [GRETA GEBHARDT](#)
To: [City Clerk Dept](#)
Subject: Public Comments - Open Session Prior to Closed Session
Date: Tuesday, January 26, 2021 12:39:50 PM

Re: Astra Zeneca housing
January 26, 2021 meeting

Short term profit for a few is being placed above the lifespan and health of Richmond residents. It is criminal to build housing that forces its occupants to work to survive a permanent pandemic lifestyle AT BEST.

Is Richmond to be known for the tolerance and propagation of the most contaminated Superfund in California, or for doing all it can do to clean it up?

With the history and knowledge of toxic neighborhoods in the US, how can anyone deliberately wish this on another human being?

Greta Gebhardt
Marina Bay resident

From: [Hari Lamba](#)
To: [City Clerk Dept](#); [Laura Snideman](#); [Tom Butt - external](#); [Eduardo Martinez](#); [Melvin Willis](#); [Claudia Jimenez](#); [Gayle McLaughlin](#); [Demnlus Johnson](#)
Subject: Public Comments Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 9:04:03 AM

SUBJECT: STOP THE PROJECT TO BUILD HOUSING DEVELOPMENT AT THE ASTRA ZENECA SITE!

Dear City Council of Richmond,

It makes no sense to build on top of a Superfund Toxic Waste site. Who in their right mind would want to live there? Please stop this project immediately. The toxic chemicals need to be cleaned up totally, not only for this site, but also so that these chemicals do not continue to pollute our great San Francisco Bay!

Dr. Hari Lamba
6217 Bernhard Ave
Richmond, CA 94805
Global Net Zero by 2050
US & California Net Zero by 2050
www.brighterclimatefutures.com

From: [Inger Coble](#)
To: [City Clerk Dept](#); [Laura Snideman](#); [Tom Butt - external](#); [Eduardo Martinez](#); [Melvin Willis](#)
Subject: Fw: Public Comments – Open Session prior to Closed Session (Astra-Zeneca site)
Date: Tuesday, January 26, 2021 11:19:18 AM

From: Inger Coble
Sent: Monday, January 25, 2021 12:15 PM
To: cityclerkdept@ci.richmond.ca.us <cityclerkdept@ci.richmond.ca.us>
Subject: Public Comments – Open Session prior to Closed Session (Astra-Zeneca site)

Dear City Council,

I live in the Marina Bay and I strongly oppose the planned housing development at the Astra-Zeneca site as it is currently proposed. I am a birder and I walk the Bay Trail daily. I believe that the housing development is much too close to the marsh. We have several endangered species living in the marsh where several buildings are proposed, among them the Ridgeway Rail which is often seen in the 51st area. Housing brings pets, and we already have a problem with feral and domestic cats in the Marina Bay. There is no doubt that a significant number will be added with this project. As you might know cats kills millions of birds every year.

The Pandemic has changed many things, among them a change in how people work. Many people now work from home and probably will continue doing so after the Pandemic is over. People are moving out of the expensive Bay Area to other parts of the country while still working for companies in the Bay Area. This means that the urgent need for housing before the pandemic has ceased to exist. I am not against building housing, but the project proposed at the Astra-Zeneca is meant for the very wealthy. I doubt that any of the poor people in Richmond will be able to afford living there even in the low-income units that are planned. Rental housing downtown Richmond would serve the Richmond citizens better.

The Pandemic also has increased the traffic on the Bay Trail significantly. People has discovered how beautiful it is with the birds and the great views. It is already a problem with bicyclists and walkers intermingling. An increase of 4000 units will increase this problem and a widening of the Bay Trail will further endanger the wildlife.

I don't mind housing along Meede St., however as the project is currently designed it is way to close to the marsh and way to big all together.

Best regards,
Inger Coble

135 Lakeshore Ct.

From: [Janet Johnson](#)
To: [City Clerk Dept](#); [Laura Snideman](#)
Subject: "Public comments – Open Session prior to Closed Session"
Date: Tuesday, January 26, 2021 12:59:16 PM

Dear City Council and City Manager,

I have lived in the Richmond Annex within one mile of the Astra-Zeneca chemical toxic site for forty years. I urge you to make sure this project doesn't go forward as planned, and that the city does everything in its power to reach a settlement of the suit before it.

The manner in which the previous city council went about approving the development agreement was cynical and morally reprehensible. What kind of responsible "public servants" approve a housing development on a toxic waste dump?

We know there's a housing shortage in Richmond, but the housing we need is not luxury housing; there's already more than enough high-end housing in Richmond and around the Bay. What Richmond needs is affordable housing close to infrastructure and amenities, near transportation corridors.

DTSC is a failed agency. They are the only CA state agency without an oversight board, and they run a #30M-dollar deficit. They are notoriously industry-friendly and are clearly not acting in the best interests of the Richmond community.

Astra-Zeneca is an international pharmaceutical giant poised to make billions from its Covid-19 vaccine. They need to be held responsible to clean up this site under existing law.

We need independent analysis of the health risks and science behind sea-level rise and contamination of groundwater before any plans are made for this site.

If the site is cleaned up appropriately, other developers may be interested in working with the city and may offer real community benefits, not hollow promises.

Please do not move forward with any further plans for this site. Instead, please instruct the city's legal staff to look into ways of working with the community, not against it.

Thank you.

Janet Johnson

Co-coordinator, Sunflower Alliance

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Janet Scoll Johnson

pronouns: she/her

[No Coal in Richmond](#)

[Sunflower Alliance](#)

[Richmond Shoreline Alliance](#)

From: [Janice Haugan](#)
To: [City Clerk Dept](#)
Cc: [Tom Butt - external](#); richcityservant@gmail.com; [Melvin Willis](#); [Claudia Jimenez](#); [Gayle McLaughlin](#); [Demnlus Johnson](#); [Laura Snideman](#)
Subject: Public Comments – Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 1:00:39 PM

Dear Mayor Butt and Members of the City Council,

Please insist that Astra-Zeneca do a full clean up at the proposed Campus Bay Project site. Zeneca (Imperial Chemical Industries) was fully aware it was a toxic site when it acquired Stauffer. We need to hold these businesses accountable for the messes they're created. Astra Zeneca can afford it. They profited over one billion dollars in 2019.

Thank you for considering my request.

Sincerely,

Janice Haugan

133 Bayside Ct.
Richmond, CA 94804
jehjj@gmail.com

From: [Jeannette Kortz](#)
To: [Tom Butt - external](#); [richcityservant](#); [Melvin Willis](#); [Demnlus Johnson](#); [Nat Bates](#); [claudia jimenez](#); [Gayle McLaughlin](#); [Laura Snideman](#); [Lina Velasco](#); [City Clerk Dept](#)
Subject: Public Comments – Open Session prior to Closed Session - January 26, 2021
Date: Monday, January 25, 2021 4:11:29 PM

Dear City Council, City Manager, Planning Department Manager, and City Clerk,

My name is Jeanne Kortz and I am a Richmond resident.

I am writing to you to let you know that I oppose the proposed housing development on the highly toxic Campus Bay/Astra Zeneca site. This site must be cleaned up to residential standards before any housing is built, and before any human being can live there.

The previous lame duck city council voted in favor of the less than residential cleanup, which in my opinion is dangerous, egregious, and puts the city in serious future financial risk as residents become ill or possibly die due to the highly toxic slew of chemicals left in the ground, and then in turn, they or their families sue the city for allowing housing to be built on a highly dangerous toxic site.

The previous lame duck City Council approved this development without updated CEQA/EIR reports, without an updated geotechnical report, without using current sea level rise data (this is a very real problem when salt water mixes with the toxic cinders), and most of all, against the will of the residents of Richmond. They ignored the environmental groups, the experts and scientists who provided data that explained the health risks, the environmental impacts, and the toxic leakage currently going into the San Francisco Bay. They only listened to the developer's hired "expert". This is akin to the fox watching over the hen house.

By voting in a progressive majority, the residents of Richmond spoke loud and clear their opposition to this development, and I might add, the development at Point Molate. The vast majority of letters to the council, and the vast majority of speakers addressing this issue, were in opposition. Those who spoke in favor represented the Trades Unions, the fire and police unions, and those who want their piece of the pie regarding the community benefit money, which might not even come to fruition.

I am not against development, but I am against stupid, dangerous development. I am also concerned about putting trades workers at risk working on this highly, highly toxic site.

There are ways in which the site can be cleaned up to residential standards without using loads of diesel trucks. The dirt can be loaded into containers, and the containers can be put

on trains taking the toxic material to a designated toxic waste containment site that is sealed in a concrete bunker. The dirt would be watered down to keep the contaminated dust from getting into the air, which is currently normal clean up practice.

In conclusion, I ask that the new City Council do everything it can to stop this development until Astra-Zeneca, a multi-billion dollar corporation, pays for a full residential clean up. I also ask that the new City Council fight for a health-protective review, and a reversal of all these prior bad decisions made by the previous lame duck City Council.

Thank you for your time.

Sincerely,

Jeanne Kortz
Richmond Resident since 2006

From: [Jim Hite](#)
To: [City Clerk Dept](#)
Subject: Public Comments- Open Session prior to Closed session
Date: Tuesday, January 26, 2021 9:16:03 AM

Good Evening, my name is Jim Hite, Richmond resident for 22 years. Those of you who are endorsing this scheme to cap the toxic stew at the Zeneca site, deep shame on you. We all are aware of Richmond's ongoing financial crisis but throwing 4,000 families under the bus in attempt to dig the city out of the financial hole is just plain wrong. Put on your thinking caps councilmen and come up with responsible plan for the Zeneca site. Thank you

From: [Jon Frappier](#)
To: [City Clerk Dept](#)
Subject: January 26, 2021 Public Comments – Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 12:58:07 PM

Dear Councilmembers,
I live in Richmond and take my grandkids for walks on the Bay trail along the Richmond Marina and Zeneca site. I see kids playing in the sand there all the time - I don't let my grandkids do this because of the toxics leaking into the bay. It's disturbing to me that kids face exposure to toxic vapors and poison water when they play in this area. I join my neighbors and others who for years have urged the City of Richmond to completely remove all the toxic soil and remediate the Zeneca site. This has to happen now, before more damage is done by the rising bay. Thank you.

Jon Frappier

From: [Judith Piper](#)
To: [City Clerk Dept](#); [Laura Snideman](#); [Tom Butt - external](#); richcityservant@gmail.com; [Melvin Willis](#); [Claudia Jimenez](#); [Gayle McLaughlin](#); [Demnlus Johnson](#)
Subject: Public Comments—Open Session Prior to Clised Session
Date: Tuesday, January 26, 2021 11:04:32 AM

I welcome the new council members who have the backing of their constituents to do the right thing—undo the lame duck council's irresponsible decisions and advocate for soil removal at the site.

Judith Piper
36 Bayside Court
Richmond, Ca 94804

[Sent from AT&T Yahoo Mail for iPhone](#)

From: [Karen Susag](#)
To: [City Clerk Dept](#); [Laura Snideman](#); [Tom Butt - external](#); Richcityservant@gmail.com; [Melvin Willis](#)
Cc: bradley@greenaction.com; ksusag@hotmail.com
Subject: Public Comments—Open session prior to closed session
Date: Tuesday, January 26, 2021 1:55:53 PM

Hello,

I've lived in Richmond for nearly 10 years. As a resident of Richmond and a board member of Greenaction for Health and Environmental Justice congratulations to the new city council. I am writing to urge you to reverse approval for development and construction of 4000 units of housing on top of and adjacent to contaminated soils at Astra Zeneca site. Merely capping with concrete is not adequate. Vapors and soil contamination will reach the bay and the community that lives in these proposed 4,000 units. There's science that was ignored about sea level rise. Why would any science be ignored? How many people will live there? 4000, 5000, 6000? Families will live in these units! Children whose developing brains and bodies are extremely sensitive to toxins. Is there science about the risks to living on top of contaminated soil that is capped? What are the risks? The risks are the health of people, citizens of Richmond, children. You must demand full clean up of contamination. We need housing, but not like this! Know the science, the risks to children, pregnant women, elderly. Make sure you understand the whole profile of chemicals in the soil! Are the chemicals chlorinated? Are they fat soluble and persistent food chain contaminates? So anyone eating fish or seafood from the bay may also be at risk?

I urge a precautionary principle approach.

Please, I urge a full cleanup!

Sincerely,

Karen Susag

Sent from my iPad

From: [Kathleen Wimer](#)
To: [Tom Butt - external](#); [Claudia Jimenez](#); [Melvin Willis](#); [Demnlus Johnson](#); [Gayle McLaughlin](#); [Nat Bates](#); [Eduardo Martinez](#); [City Clerk Dept](#); [Laura Snideman](#)
Subject: Public Comments – Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 12:25:02 PM

Esteemed public servants:

You have to oppose moves to solidify Richmond's reputation as a desperate, poor outpost unworthy of positive developments.

That the City of Richmond would build 4,000 housing units on a qualified EPA Superfund site leaving 98% of the carcinogenic pollutants currently leaching into the soil and the bay, as will increasingly occur with the advent of sea rise, under a thin layer of concrete reinforces that Richmond is NOT a desirable place to move or to build a business. It's a backwater, corrupt, polluted place unconcerned with people in favor of someone's profit.

Time was a person would run into walkers and bikers in local parks eager to share their excitement over having heard about and moved to Richmond. "You guys are so progressive over here; a Green Mayor, a gay chief of police!" Creative enterprises such as Pixar wanted to locate here.

Having spent time recently on campaigns of people running for regional offices beyond Richmond, I encountered first hand the view of Richmond broadly held in the bay area as impoverished, polluted, distant, desperate, with an educational system inadequate to lifting students much beyond their zip codes.

May the renewed city council, now sporting a majority of much less cynical people who hold Richmond and its people in higher regard than the previous (incidentally, all male) council, stop this housing development - as currently conceived - from proceeding. It disgraces us all, to say nothing of the pending century of harm to its residents and the surrounding environment it welcomes.

Kathleen Wimer
518 Tremont Ave

From: [Kathryn Krause](#)
To: [City Clerk Dept](#)
Subject: Public Comments - Open session prior to Closed Section
Date: Tuesday, January 26, 2021 9:14:54 AM

To the Mayor and City Council Member

I am a Richmond resident living in the Marina Bay neighborhood. I am not opposed to new housing being built, especially if it is affordable to Richmond residents.

However, I am vehemently opposed to the AstraZeneca site project until the land has had a proper clean-up. Capping it with concrete will not solve the problem of the toxic poisons beneath it. And it will eventually jeopardize the health of the residents which will be expensive to treat.

The fact that the soil is so polluted that schools, pre-schools or senior centers can't be built on the site speaks volumes.

We implore you to act on behalf of the citizens rather than the interests of commercial developers. Clean up the site properly and THEN build on it. We elected you and you must protect us! Do the right thing!!!!

Sincerely,
Kathryn Krause
2159 Northshore Drive
Richmond 94804

From: [Larissa Kelly](#)
To: [City Clerk Dept](#); [Laura Snideman](#); [Tom Butt - external](#); richcityservant@gmail.com; [Melvin Willis](#); [Claudia Jimenez](#); [Gayle McLaughlin](#); [Demnlus Johnson](#)
Subject: Public Comments – Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 12:40:27 PM

Hi all,

I'm writing in support of the city council's previous decision to move forward with development on the AstraZeneca site. As housing becomes increasingly unaffordable in the Bay Area, it's vital for Richmond to add as many new units as possible, so that everyone who wants to live in the community will be able to find a place here. From what I can tell, there's already been an extensive process to determine what types of environmental remediation are appropriate for the AstraZeneca site, and I'm concerned that some of the new proposals being made would be counterproductive both to the goals of increasing Richmond's housing stock, and to the city's public health. (In particular, the suggestion that contaminated soil should be carted away from the site rather than being capped seems to pose a risk of spreading contaminants over a wide area.) I urge the Council to continue to follow the guidance of the Department of Toxic Substances Control, so that the AstraZeneca site can soon join former brownfields like Marina Bay as a thriving part of the Richmond community.

Sincerely,
Larissa Kelly
District 6

From: [Laura Thomas](#)
To: [City Clerk Dept](#)
Subject: Public Comments – Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 12:07:50 PM

My name is Laura Thomas, a homeowner and mother residing in District 5, the Panhandle Annex. I felt betrayed by the action of a small majority of the outgoing city council to proceed with developing the toxic Astra Zeneca site by capping it.

Astra Zeneca's toxic site on the Richmond southeast shoreline is a disgrace that has been leaking highly contaminated water and vapors for decades, from the 550,000 cubic yards of hazardous material left behind after 100-years of chemical manufacturing on this shoreline site. Despite the known risks of sea level rise, liquefaction (which is more likely as sea level rise progresses), and health risks should any of the proposed "remedies" fail, the small majority of lame duck City Council members approved pouring concrete over most of the 86-acre site (but doing nothing about the toxics flowing underground onto neighboring properties and into the Bay), with up to 4,000 multi-story condos to be built on top of the mess.

The outgoing council gave no consideration to updated sea level rise data available from the San Francisco Bay Conservation and Development Commission (BCDC). They also failed to heed Cal EPA's more health-protective vapor intrusion standards announced on February 14, 2020, which apply to the most dangerous and widespread contaminants on this site. In addition, the lame duck council members blatantly and arrogantly ignored the residential and business community's near-unanimous 15-plus years of requests for a full and complete cleanup of this site before any person begins working or living on this site. The City's extremely cumbersome and poorly executed public participation tools through Zoom have also called into question the City's intent regarding public participation during this unprecedented COVID pandemic.

My hope is that our newly elected, more progressive and environmentally minded city council members can help undo the damage done by the last council for the health and safety of my family and our future generations.

Thank you for your consideration,
Laura Thomas

--

[Help Save Richmond Public Libraries](#)

From: [Linda Kaiser](#)
To: [City Clerk Dept](#); [Laura Snideman](#); [Tom Butt - external](#); richcityservant@gmail.com; [Melvin Willis](#); [Claudia Jimenez](#); [Gayle McLaughlin](#); [Demnlus Johnson](#)
Subject: Public Comments – Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 9:05:36 AM

Dear City Council ,

I am urging you to please push back on the hasty decision carried by a small minority in the recent lame-duck session to approve the planned large development on the highly contaminated Astra Zeneca superfund site. This decision reversed a previous unanimous council vote in to support full remediation, effectively disregarded the will of Richmond voters. It gave no consideration to updated sea level rise data available from the San Francisco Bay Conservation and Development Commission (BCDC) and failed to heed Cal EPA's more health-protective vapor intrusion standards announced on February 14, 2020, which apply to the most dangerous and widespread contaminants on this site.

Allowing massive quantities of hazardous waste to remain permanently, with heavy metals, pesticides, and PCB disregards the health of the community. Pouring concrete over most of the site does nothing about the toxins flowing underground onto neighboring properties and into the Bay. We can't know the future impact of such an irresponsible decision on our part of the Bay and its estuary. Many of the toxic chemicals there cause cancer, reproductive damage and other health problems. The effect of mixing of the chemicals of concern, especially considering the coming rise in sea level, will lead to unknown environmental consequences and health impacts. In addition to endangering our wildlife neighbors, such a poorly conceived project perpetuates and extends environmental racism towards the many low-income people of color living in adjoining and nearby communities, like Crescent Park Housing. This cannot happen in 2021.

I urge the Council to show itself as responsible stewards and accept no less the best clean-up of this precious and irreplaceable site, home to so much wildlife and adjoining the San Francisco Bay Trail, that is humanly possible, and not make such a momentously serious decision concerning public health during a pandemic, when full public comment and participation is not even possible.

Thank you for your service to our city.

Sincerely,

Linda Kaiser
110 Bayside Court
Richmond

From: [Maggie Paul LAZAR](#)
To: [City Clerk Dept](#)
Subject: Public comments - Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 12:47:38 PM

Dear City Clerk, Major, and City Council Members

It is critical that the City of Richmond assess the effects of sea level rise on the toxics legacy at the Zeneca/Former Stauffer Chemicals site. I've worked next door for more than 30 years and object to the plumes of toxic materials flowing out from the property. Leaving the majority of the toxics on site, beneath the proposed high-density housing, will only further complicate addressing future problems that could arise from changes in sea levels.

Thank you for recording my concerns.

Maggie Lazar
CAG Member
UC Berkeley employee

From: [Margaret Child](#)
To: [Eduardo Martinez](#); [Tom Butt - external](#); [Claudia Jimenez](#); [Gayle McLaughlin](#); [Melvin Willis](#); [City Clerk Dept](#); [Laura Snideman](#)
Subject: Public Comments - Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 12:41:13 PM

To: Richmond City Council

My name is Margaret Child and I am a homeowner in the Richmond Annex.

I am writing to ask the Richmond City Council (RCC) to re-consider their vote to approve the latest development proposal for the Campus Bay Site (previously referred to as the Zeneca Toxic Waste Site). The original plan was bad enough but this revised plan is even worse.

The suggested number of housing units has increased from 1,5xx to 2,000 (nad even 4,000) with no resistance or questions whatsoever. Let's take a look at that. Have any of you been to the Marina Bay Complex? Imagine taking twice the capacity of Marina Bay and cramming all of that housing onto even less ground space. Have you really taken the time to consider how the local traffic will be impacted by this many residents? How the quality of the air will be impacted?

The claim that this development is 'close to public transport' is misleading to the point of lying! If I were a potential buyer, 'close to' would translate to 'within walking distance', which would mean within $\frac{3}{4}$ mile radius of either of the local Bart stations, Richmond or Del Norte. (Forget the ferry service which only services San Francisco commuters). The fact is that residents of the community would: 1) Have to own a car and 2) In order to use BART they would either have to pay for parking or find street parking in an area that has a 4 hour parking limit. Have any of you tried parking anywhere near the Richmond BART station? It's near to impossible! Parking is made doubly difficult at Del Norte since BART has cut the number of parking spaces by building housing on their property. The inconvenience and extra costs involved totally negate any supposed 'advantage' of living 'close to public transport'!!

I am not persuaded that the residents are going to be sufficiently protected from the toxins that have been stored in the soil for more than 100 years. No matter what the single source who works for the developer has to say about the protective measures they intend to use, it seems that they are unable to produce any supporting evidence from other similar sites where these measures have been tried and where the results have been tested over a period of time sufficient to ascertain that they are effective in the long term (ie. 50 years or more). Anything short of this is nothing more than an experiment on the lives of the residents and as such should surely be considered carefully to protect the city from liability.

The developers are recommending/offering testing for 5 years. This is totally insufficient time to be able to tell for sure that the mitigation measures have worked well enough such that the health of the residents (who have put their hard earned money on the line) will not be adversely affected by the contaminants that have been left on the site. Testing need to be guaranteed to continue until no off gassing or leaks of any kind have been detected (by an outside agency) for a period covering the previous 10 years at least.

I am very concerned that the council seems to be voting to NOT require a complete

clean up SIMPLY BECAUSE THERE DOESN'T SEEM TO BE AN EASY SOLUTION!! Problem sites like this don't have easy solutions! **BUT A COMPLETE CLEAN UP** in this case is **NECESSARY** because of all the terrible and far reaching negative implications of proceeding that we have tried to bring to your attention.

A complete clean up is doable!! First we need the WILL and then we will find a WAY!!

Please take the long term into account. How long would you expect these houses to remain in use? If you expect them to be in use for more than 50 years then you need to take into account all that we have told you about the likelihood of earthquakes and the damage to the **ENTIRE BAY AREA ECOSYSTEM** that is waiting to happen as the water level in the Bay rises. Just imagine the devastation that would result from exposing the full array of toxins stored at this site to the tidal activity of the water in the Bay, which would surely happen with a 7ft rise which is predicted by NOAA. Many cities around the Bay are starting to pay attention to the implications of a rising water level, eg. San Francisco and Berkeley. Why is the RCC choosing to ignore this very significant issue? The potential dangerous pollution doesn't just affect Richmond, it affects every single community around the whole of the Bay because it poses a threat to the very existence of those communities.

Thank you for your attention to this matter.

Your sincerely
Margaret Child

From: [Michele Rappaport](#)
To: [City Clerk Dept](#)
Subject: Public Comments – Open Session prior to Closed Session
Date: Monday, January 25, 2021 8:18:28 PM

1/25/2021 7:40 PM

Dear Mayor Butt and Richmond City Council,

I have lived in Richmond for 33 years. I have served special needs children throughout the city as a contractor providing speech-language services in years past.

I am writing to all of you to reconsider this residential building on the highly toxic Zeneca site.

From reliable community sources I understand and edited:

The Zeneca site on the Richmond southeast shoreline has been leaking highly contaminated water and vapors for decades, from the 550,000 cubic yards of hazardous material left behind after 100-years of chemical manufacturing on this shoreline site. Despite the known risks of sea level rise, liquefaction (which is more likely as sea level rise progresses), and health risks should any of the proposed “remedies” fail, a small majority of City Council members approved pouring concrete over most of the 86-acre site (but doing nothing about the toxics flowing underground onto neighboring properties and into the Bay), with up to 4,000 multi-story condos to be built on top of the mess.

*The toxic soil currently on site should be removed before building up to 4,000 Campus Bay condos on top of the Zeneca site, a US EPA Superfund-**qualified** site! Otherwise, not only will the construction workers risk the health of themselves and their families, but all future residents will be at risk as well.*

Sea rise, CalEPA’s more health-protective vapor intrusion standards, announced on February 14, 2020, apply to the most dangerous and widespread contaminants on this site, and the ignored residential and business community’s near-unanimous, 15-plus years of requests for a full and complete cleanup of this site, before any person begins working or living on this site, are all reasons to curtail this project or remove all of the

contaminated soil. The City's public participation tools have also called into question the City's intent regarding public participation during this unprecedented COVID pandemic.

The community objected so strongly to the City's railroading of this bad proposal, that in November a new City Council majority was voted in, who support working with the highly engaged community. However, despite many requests that all remaining decisions be held until the new council was seated, the council members still pushed through additional decisions regarding the Campus Bay/Zeneca development proposal in December. A lawsuit was filed on December 30, 2020 against the City of Richmond. Help to support a health-protective review, and just reversal.

I could not have said it better, although I made a few edits. A new generation of kids will be born and brought home to the Zeneca site, to live and play, putting them at risk.

Care about the children, at least, be concerned, and remove the soil.

Michele Rappaport

Stay safe, wash hands, and lovingly together we keep social distance.

Confidentiality Notice:

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From: pvjones10@gmail.com
To: [City Clerk Dept](#)
Cc: [Laura Snideman](#); [Tom Butt - external](#); richcityservant@gmail.com; [Melvin Willis](#); [Claudia Jimenez](#); [Gayle McLaughlin](#); [Demnlus Johnson](#)
Subject: Public Comments - Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 9:35:55 AM

Dear Mayor and City Councilmembers:

Wishing you and all a better year in 2021!

I feel like I'm having a throwback Thursday (or Tuesday)—since we are STILL proposing to build housing on the Zeneca superfund site without doing a proper clean-up. Those of us who have been around this block over and over know about the long list of ingredients in the toxic soup that is seeping out into the Bay. We know that this shoreline site will be sitting target for sea level rise. We know about all those who were sickened during the last sloppy clean-up with soil blowing in the wind into the lungs of anyone living, working or recreating nearby. Back in the day, when I rode my bike along the trail and saw the work going on, I was unaware of the dust that I was breathing in. Let's not repeat those bad decisions of the past and work for a healthy Richmond- its people and its shoreline.

I urge you to:

- Follow through on the residential and business community's near-unanimous 15-plus years of requests for a full and complete cleanup of this site before any person begins working or living on this site.
- Heed Cal EPA's health-protective vapor intrusion standards announced on February 14, 2020
- Reconsider building housing on this site.

Thank you,
Patricia Jones
Former Executive Director of CESP
Sierra Club State Parks chair



Virus-free. www.avg.com

From: [Regina Gilligan](#)
To: [City Clerk Dept](#)
Subject: Public comments in Open before closed session
Date: Tuesday, January 26, 2021 11:59:10 AM

I am opposed to housing going up on the toxics laden Astra Zeneca/ Stouffer chemical site. The person who conducted the initial clean-up a partial at best is financially connected to the Campus Bay. Under Trump guidelines, personnel were stripped in the oversight of EPA. Time is the time to scrutinize the site before exposing workers and then families to known carcinogens in the soil.

I would like to speak tonight

Regina gilligan

From: [Sara Sunstein](#)
To: [Nat Bates](#); [Demnlus Johnson](#); [Melvin Willis](#); [Gayle McLaughlin](#); [Tom Butt - external](#); [Claudia Jimenez](#); [Eduardo Martinez](#)
Cc: [City Clerk Dept](#); [Laura Sniderman](#)
Subject: Public Comments – Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 11:13:32 AM

Dear Council Members and City Clerk and Ms Sniderman,

I am writing in support of the legal challenges to developing housing and grocery store and other retail on the former Astra-Zeneca site. The site is a seriously toxic soup that is dangerous to be anywhere near, nor does it have underground containment barriers. Poisoned over the last century by ignorant people and companies at and near the site who assumed the Bay was a dumping ground.

The plan approved by the former city council does not include cleaning up this site--that qualifies as a Super Fund site--to residential quality, but only to cap it. This is unacceptable for the safety of workers, residents, especially Seniors, those with compromised immune systems, and children, who wouldn't be allowed to play on the ground! Kids not allowed to play on grounds around home=set up for disaster (and more law suits).

Moreover, the development plan does not take into account sea level rise, another set up for disaster. It's set back from the shore by how many feet? and is how many feet above sea level? And how many climate scientists have been saying in the past several years that the climate changes are happening faster than their predictions of even a decade ago?

and lest I forget, does the EIR mention non-engineered landfill and what would happen during an earthquake?

Yes to more housing!! No to housing on this site.

Yes to stopping the development at this site, settling the law suits, and saving much needed funds for housing elsewhere.

Yes to housing on many of the possible options on vacant lots, abandoned buildings, etc in town, close to transit, with no or much easier clean-up.

Yes to cleaning up this site 100% for the sake of the Bay, natural life along our shores and in the Bay, and the health of the fish locals catch and eat!

I support and trust the new Council to take immediate steps to prevent a horrible debacle.

Sara Sunstein
Richmond Annex

From: saratheiss@aol.com
To: [City Clerk Dept](#)
Cc: saratheiss@aol.com
Subject: Public Comments – Open Session prior to Closed Session
Date: Tuesday, January 26, 2021 12:42:56 PM

Dear City Clerk,

Please send my comments to all city council members before today's meeting. Thank you.

Sincerely,
Sara Theiss

Dear City Council Members and Mayor Butt,

After 24 years in Pacifica, I moved to Richmond three and half years ago. I love the weather, the people, and the history of Richmond, and the access to so many wonderful parks, especially the Richmond portion of the Bay trail. Last year I was shocked to learn about the plans to develop the toxic-laden Zeneca site, a favorite walking spot for me and many others. I was again shocked when the city council ignored scientific information and standards, including the 2020 CAL-EPA's 2020 vapor standards, and voted late last year to sell the development rights to companies that will be long gone as the toxics continue to leak into the bay and poison those who live and work on and near the area.

You are probably familiar with Pacifica's struggle with crumbling bluffs. Pacifica has an excuse: the houses on the bluffs there were built after World War II, when there was a lot of nonpolluted land between the houses and the ocean and the threat of rising sea levels were unknown to most. Richmond has no such excuse: We know NOW that scientists project that sea levels could rise 12 inches in the Bay Area as early as 2030. With a moderate five-year storm, total water levels across the Bay Area would reach 36 inches above the levels measured in the year 2000. (<https://www.nbcbayarea.com/investigations/unlike-any-disaster-we-have-ever-seen-says-state-agency-about-rising-seas-in-bay-area/2236314/>.) Stronger and wetter storms in California are, of course, another result of global warming. (<https://climate.nasa.gov/news/2740/climate-change-may-lead-to-bigger-atmospheric-rivers/>) Who will be stuck pay for mitigation measures as the tides encroach? And if/when the predicted earthquake hits and liquefaction causes widespread damage? Our city will undoubtedly be stuck with a significant part of the bill.

For these reasons, the city must assure that all toxic soil be removed before any work on the site is done. I urge the city council as well to explore all avenues and stop the housing development. We need the area for marsh land that can help absorb the rising seas.

Sincerely,
Sara Theiss

4613 Wildwood Court
Richmond CA 94803

From: falconmae@yahoo.com
To: [City Clerk Dept](#)
Subject: Public Comments Open Session Prior to Closed Session City Council meeting 1/26/21
Date: Monday, January 25, 2021 2:27:31 PM

Dear City Council Members

I am writing to oppose the city's plan to contract to build up to 4000 housing units and retail on the Astra Zeneca site adjacent to the Bay trail, known as Campus Bay.

Over the past 50 years three billion birds have disappeared in North America due to development and habitat loss. The proposed development and shoreline park at Campus Bay will only add to that number in its current configuration abutting the marshes.

The San Francisco Bay/Pacific Coast flyway hosts millions of birds a year in their spring and fall migrations. They come for rest and food as they embark on their international journeys and are protected under federal and international law.

In addition to these migrating species, many are resident and live in the marshes around the Bay including those along the Bay trail in Richmond. The Richmond marshes including the ones adjacent to the proposed development are home to the Federally listed endangered Ridgways Rail which is endemic to the Bay and which requires specific habitat in which to breed and live.

Birds like the rail don't just go somewhere else when their habitat is under threat. They are disturbed, they are displaced and they disappear.

The San Francisco Bay has been designated a RAMSAR wetlands of international importance. While the protocols aren't legally binding, it is expected that the stakeholders and municipalities around the Bay abide by the understanding that they need to protect the marshes and uplands within their jurisdiction. This includes Richmond.

Richmond has an opportunity to do something significant on the site, to think outside the redevelopment box of the 1950s and create something that does not involve a building project on such a large scale.

Clean up this Superfund site, scale back the footprint, and protect both humans and wildlife

Sheila Dickie
Richmond resident

From: [TARNEL ABBOTT](#)
To: [Tom Butt - external](#); [Nat Bates](#); [Eduardo Martinez](#); [Gayle McLaughlin](#); [Melvin Willis](#); [Demnlus Johnson](#); [Claudia Jimenez](#)
Cc: [Laura Snideman](#); [City Clerk Dept](#)
Subject: Public Comment Before Closed Session on ZENECA SITE
Date: Tuesday, January 26, 2021 10:23:38 AM

DATE: January 26, 2021

TO: Richmond City Council Members:

FROM: Tarnel Abbott

SUBJECT: Public Comment Before Closed Session on ZENECA SITE

Note: Below my comments I have pasted a Press Release dated January 5, 2021 to give you more background information.

1. The virtual City Council and Planning Commission meetings conducted via Zoom are difficult, confusing and frustrating to the many people who have experienced being dropped or not being called on. The council needs to find a process which will be more inclusive.

2. Now is the time for reconciliation between the City and the community. The community based lawsuit to stop the proposed "Campus Bay" development of 4,000 housing units on the highly toxic Zeneca/former Stauffer Chemical site was triggered by the negligence of the lame duck city council whose term ended 2 weeks ago. They voted to reverse a prior unanimous decision to remove the site hazards and instead leave massive quantities of toxics in place. They willfully ignored the community wishes and the advice of independent experts. The outgoing council gave no consideration to updated sea level rise data available from the San Francisco Bay Conservation and Development Commission (BCDC). They ignored public comment warnings that Cal EPA vapor intrusion standards were undergoing more restrictive changes (announced February 14, 2020). These new more protective intrusion standards were triggered by findings that TCE (trichloroethene) is much more carcinogenic at lower concentrations and exposures than previously known. TCE is one of the most prevalent VOCs (volatile organic compounds) on the Zeneca site. The Zeneca site is leaking highly contaminated water and soil gas from 550,000 cubic yards of hazardous material left behind by 100-years of chemical manufacturing. The community has demonstrated its commitment that the material be removed from the shoreline to protect the San Francisco Bay and future generations from its harmful impacts. There is no containment on the sides or underneath the massive quantities of hazardous material, allowing contaminated soil and groundwater to leak, unchecked forever.

Now, this new City Council has an opportunity to change course and seek ways to remove the site's hazardous material before development – no homes on Zeneca's toxic landfill. Solutions can and must be found to resolve shoreline hazards that do not include leaving them in-place. Leaving contaminated material in place jeopardizes human and environmental health during and after future development. You can avoid future lawsuits and liability for the City – no homes on Zeneca's toxic landfill.

3. Now is the time to resolve the Point Molate and Zeneca lawsuits. I urge you to direct staff to strategize how to undo what the last council sought: to bind the City to new developer agreements.

Tarnel Abbott, Richmond Resident

(Press release follows)

FOR IMMEDIATE RELEASE

DATE: January 5, 2021

Lawsuit Filed to Stop Richmond Housing Development on Toxic Waste Site Owned by AstraZeneca

Richmond, CA — A coalition of Bay Area environmental and community organizations filed a lawsuit in Contra Costa Superior Court to stop up to 4,000 units of housing planned for the AstraZeneca toxic waste site. The lawsuit, filed against the City of Richmond on December 30, 2020, asserts that approval of the project violates the California Environmental Quality Act (CEQA) by not taking into account current science on sea-level rise and more stringent health standards.

"By failing to update its old environmental review, the city never addressed the most dangerous impacts. Instead, the city justified changing its policies by reliance on outdated climate data, project details, reports, and modeling of toxic effects," according to Stuart Flashman, lead attorney for the Petitioners in the suit.

(Petitioners: Richmond Shoreline Alliance; Citizens for East Shore Parks (CESP); Sunflower Alliance; Sustainability, Parks, Recycling, and Wildlife Legal Defense Fund (SPRAWLDEF); and, Greenaction for Health and Environmental Justice.)

The 86-acre site is located on Richmond's southeast shoreline next to the UC Berkeley Field Station and across I-580 from Crescent Park family housing. More than 100 types of hazardous compounds, the legacy of a century of dumping, remain on site, and less than 2% of the contaminated soil will be removed under the current proposal. The hazardous compounds include arsenic, barium, copper, lead, mercury, PCBs, volatile organic compounds (VOCs), radioactive materials, and trichloroethylene (TCE), a chemical used in industrial manufacturing and known for its extreme carcinogenicity and other health effects.

In September 2018, the Richmond City Council endorsed a clean-up of AstraZeneca's Campus Bay site to the highest residential standard. However, in November 2019, after a developer promised millions of dollars to local groups, a narrow majority of the council retracted that recommendation. Instead, they voted to allow over 98% of the carcinogens to be left on-site beneath the proposed high-density housing, leaving the toxics forever leaking into the surrounding properties and San Francisco Bay.

In November 2020, Richmond voters elected a new council majority that supports a full cleanup, yet that did not stop the lame duck narrow majority from voting to leave the toxics in place and build on top of them, taking advantage of COVID restrictions to limit the public's ability to stop this unpopular and dangerous plan. These few council members ignored the hundreds of Richmond residents and public health and environmental experts testifying against this proposal in the less than 30 days between the City's first preliminary approval and the final approval vote on December 15, 2020.

Because of the hazards remaining in place, no onsite pre-schools, K-12 schools, or health or senior care facilities will be allowed. Yet, everyone who lives there will be at risk by living on a toxic site while the health and environmental impacts worsen as sea level rises.

PRESS CONTACTS

Attorney for Richmond Shoreline Alliance, et al.: Stuart Flashman: stu@stuf flash.com 510-652-5373

Attorney for Citizens for East Shore Parks: Robert
Cheasty: rcheasty@cheastylaw.com 510-701-4321

Attorney for SPRAWLDEF: Norman La Force: n.laforce@comcast.net 510-
295-7657

Richmond Shoreline Alliance <http://www.richmondshorelinealliance.org>

Co-Chair Andres Soto: andres@cbeal.org 510-237-6866

Co-Chair Pam Stello: pamstello@gmail.com 510-210-4175

Greenaction for Health and Environmental Justice

Executive Director Bradley Angel: bradley@greenaction.org 415-722-5270

From: [Cordell Hindler](#)
To: [City Clerk Dept](#)
Subject: Public Comments Open Forum
Date: Thursday, January 21, 2021 10:33:55 PM

hello Sabrina, i have a couple of Comments for the record

1, the update is that my Projects is coming along exquisitely and i will keep the council informed on the Progress

2, i was Thinking that the Council should revisit the idea of having the Standing Committees being reinstated to discuss the budget

sincerely
Cordell

From: [Edith Pastrano](#)
To: [City Clerk Dept](#)
Subject: Public Comment Agenda Item G-2
Date: Tuesday, January 26, 2021 2:58:25 PM

PLEASE READ ALOUD

Floralma Bac-

"My name is Flora Bac and I am an ACCE (Alliance of Californians for Community Empowerment) member and I live in Richmond. During the start of the pandemic I lost my job. Until this day I have not been able to get back to work and I struggle to keep afloat as a single mother. As a tenant this has been an extremely difficult time. Our moratorium will soon expire and I am afraid of what is next. I urge the Mayor to appoint a tenant to the board to make sure that my rights are being looked after and enforced. Thank you for your time.

Sandra Aldava-

"My name is Sandra Aldava, I am a Richmond resident and also a member of the community group called ACCE. I just want the mayor to remember that the voters voted for Rent Control and as a tenant I would like to see someone who is qualified to be on the board who will look to protect tenants like me and families who are currently struggling with housing due to the pandemic, truthfully many of us have been struggling to make ends meet due to the high cost of housing and lack of a raise at work. The COVID-19 pandemic only made everything worse. So we need the Mayor to do the right thing and appoint qualified tenants with experience being a tenant who lives in Richmond and cares about tenants rights and won't work backwards on tenant issues, that is all. Have a blessed day."

Maria Sanchez-

Hello members of the council, my name is Maria Sanchez and I live in Richmond, I wanted my comment to be read tonight so Mayor Tom Butt is aware that we the people of the city of Richmond need representation of tenant protections on the Rent Board to make good decisions based on tenant experiences. I understand that being a landlord is a tough job but please make the right selection when appointing for the Rent board because we need a tenant voice on the board, thank you!"

Carmen Serrano-

"Good evening members of the council I am Carmen Serrano and I am here to comment tonight on the appointment to the Rent Board. Please make sure that this person is a tenant and lives in Richmond and knows what it is like to live as a poor working tenant with limited English language ability during a pandemic. A lot of times it is those who suffer the most because there are landlords even though not all, but some who exploit their tenants into living in run down hazardous conditions while at the same time ask for more rent money or harass their tenants so we feel uncomfortable to try to make us move out. This is not fair and not a way to do business. Please appoint someone who is aware of what is happening to tenants in this time of global pandemic, thank you. "

Edith Pastrano
Community Organizer
Alliance of Californians for Community Empowerment
(ACCE)
C. 510.672.6261

From: [Cordell Hindler](#)
To: [City Clerk Dept](#)
Subject: Public Comment H-3 Study Session
Date: Thursday, January 21, 2021 10:38:22 PM

hello Sabrina, i have some wonderful news i have received Emails from Richmond and De Anza High in regarding the Vacancies of the Youth Council and the oversight Board

sincerely
Cordell