

Written Testimony of Dr. Rafael Moure-Eraso
Chairperson of the US Chemical Safety Board
House Oversight and Government Reform Committee
March 4, 2015

Good Morning,

I am Rafael Moure-Eraso, Chairperson of the US Chemical Safety Board or CSB. I would like to thank you for inviting me to speak today.

I come to you today, with just over 15 weeks to go in my term of office, to report on progress and accomplishments the CSB has made since we last met, and to discuss the path ahead for the agency.

I will start by frankly acknowledging that a number of members of this committee have been critical of my chairmanship of the CSB. I was humbled by the messages I heard loud and clear during your hearing eight months ago in June.

I took your criticisms to heart. And so the report output is back on schedule.

The important core mission work of the CSB has proceeded expeditiously. We have completed eight high-quality chemical accident investigation reports in the last nine months. That is a record for the agency. These reports represent the culmination of months and years of hard work by our highly-motivated investigators. These are good public servants who spend long months away from their homes and their families at hazardous accident sites, digging into the root causes of explosions, fires and toxic releases that take too many lives and endanger too many communities.

I have tried to work closely with my fellow board members and with staff. I have worked hard with them to resolve the issues you raised, and we have adopted a set of recommendations made by former Rep. Henry Waxman aimed at improving the functioning of the Board.

To address management and morale issues, I have promoted the creation of a Workplace Improvement Committee (WIC), composed of CSB staff members. The WIC has met over the last few months, ultimately producing a plan that outlines six initiatives that have been included in the CSB's 2015 action plan. The CSB has also contracted with two consulting firms to address the agency's morale issues.

I have also been collaborating with my fellow board member to modernize and streamline the CSB's governance. Our goal is to have the CSB's structure and authority reflect that of the agency the CSB was modeled after, the well respected National Transportation Safety Board (NTSB).

Through the hard work of the staff and my fellow board members, the number of open investigations, which was at an historic high of 22 in June 2010, when I began my term, is now

down to just six, which is close to an historic low for the agency, going back all the way to the agency's beginning in 1998.

By the end of the current fiscal year, five of these six remaining cases are on track to be completed. These include final reports on the tragic fertilizer explosion in West, Texas; the chemical spill that contaminated the drinking water of 300,000 West Virginians last year; the explosion that destroyed a Puerto Rico gasoline terminal in 2009; and the explosion that killed two workers at a Louisiana olefins plant in 2013. And before my retirement in June, we will be issuing the last of a series of reports on the Deepwater Horizon – Macondo well blowout off the coast of Louisiana that killed 11 workers and disrupted life for millions of Gulf residents. Last year we issued two volumes of that report and two accompanying technical reports which – for the first time – established why the blowout preventer failed to work properly, and why the ensuing huge oil spill occurred. That report – and its critical findings about blowout preventer design and testing – is a major contribution to offshore drilling safety, we believe.

As my time, and that of my colleague Member Griffon, draws to a close in three months, we will be leaving behind, I believe, a newly energized agency. Two excellent new appointees, Manny Ehrlich and Rick Engler have already shown an enthusiasm for the agency's vital mission. Mr. Ehrlich spent his life's career in industry, particularly in plant management, training, and emergency response. Mr. Engler's life has been in the service of bringing labor and environmental interests together to better protect workers and the public. It's a perfect fit. Other nominees eventually will be confirmed and I am confident the agency will operate in a way that satisfies the expectations of this committee.

It's been a time of taking stock. I acknowledge my shortcomings while assuring you that my commitment to the mission of the CSB – preventing chemical accidents through top-quality investigations and recommendations – has never wavered for a moment. Everything I have done, every decision I have made, has been made with the safety of workers and the public in mind.

Some of my decisions may not have been popular. My communications could definitely have been better. But while acknowledging these problems and more, with all due respect to the work of the committee, I believe the record shows a significant list of mission-oriented accomplishments over the last nearly five years that I have served with the CSB. That is to say, the core work of the CSB has been accomplished and in my view chemical industry workers and neighboring communities have greatly benefited from our thorough, scientifically based investigations.

I am proud of the work of the CSB over this period. We have large audiences of stakeholders who pay close attention to our reports and acclaimed safety videos and use them as essential tools to help prevent accidents. We know this from feedback from labor groups, safety trainers, and corporate safety executives, not just in the U.S. but from across the globe.

Despite what some have said, we have been very productive over the last five years, though I say that with the caveat that people know that we are a tiny agency of about 40 employees, 21 of whom are investigators. Our budget regularly has been around 10 to 11 million

dollars a year. Yet demands for investigators to deploy are practically ceaseless. They come from organized labor, state and local officials, and members of the House and Senate. It is very difficult to say no to an investigation of a significant accident where one or more lives were tragically lost. Yet additional resources – that is, the additional budget allocations that we had requested – have never materialized, meaning we have routinely had to pull investigators off of one investigation to start up another.

We have tackled several very big and complex accidents like the Chevron refinery fire in the Bay Area, the Tesoro refinery explosion in Washington State, and the Deepwater Horizon – Macondo blowout in the Gulf.

Over the years we have concluded several major investigations of accidents involving combustible dust which ignites in massive fireballs causing painful burn injuries, and death. We have been tireless in seeking ways to get all of industry to control this hazard.

Several committee members have commented on the length of time it has taken us to complete some investigations – the Tesoro Anacortes explosion, for example. I shared that concern as time went by, as we had to complete other pressing investigations. Timely completion is a shared goal we have. Still, the Tesoro report is thorough and unflinching in its analysis and recommendations and is very relevant in today's discussions of refinery safety issues. Despite how long it took, this report is having a significant positive impact. In January 2015, the Washington State Legislature convened a hearing and is now considering a major expansion of its refinery safety inspection program as a direct result of the CSB report.

The highly detailed reports on serious or fatal chemical accidents released during my tenure include, amongst others, investigations into Bayer Crop Science in West Virginia, Kleen Energy in Connecticut, Xcel Energy in Colorado, DuPont plants in West Virginia and New York State, Veolia Environmental Services in Ohio, Goodyear in Texas, Hoeganaes in Tennessee, Texas Tech University, Donaldson Enterprises in Hawaii, and Carbide Industries in Kentucky.

During the past eight months, as I mentioned, since the Committee's June 2014 hearing, this pace has further accelerated and is now the highest in the agency's history. Additionally, we have held a total of seven public meetings since January 2014.

These public meetings examined, among others, the Tesoro refinery fire in Washington State, the AL Solutions dust explosion in West Virginia, the Deepwater Horizon disaster in the Gulf of Mexico, the regulatory and safety standards issues behind the Chevron refinery fire in California (two separate full reports), the dust explosion at U.S. Ink in New Jersey, and the ammonia release at Millard Refrigerated Services in Alabama.

In addition to reducing the backlog, and cutting the time to report completion, we have worked on outreach and closure for our important safety recommendations, which as you know go to companies, the industry, labor groups, national fire code and building standards organizations, and sometimes to the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA), if warranted.

As of today, 73% of CSB recommendations have been closed, 65% of them positively based on successful implementation. Our recommendations are being accepted by the recipients with appropriate changes and safety improvements made. But numbers alone don't tell the whole story. Our CSB work over the last five years has had an impact on safety. Consider these accomplishments:

- The CSB currently employs a record high number of investigators.
- Since January 2014 the CSB has held seven public meetings across the country in communities impacted by chemical accidents. The CSB has released eight video products since January 2014 and 26 video products since June 2010.
- The President requested an 11% increase for the CSB's budget for 2016/
- The President issued two broad executive orders in 2013 and 2014 seeking to implement CSB recommendations.
- The US Circuit Court of Appeals affirmed CSB offshore jurisdiction, which has enabled the CSB to move forward with its Macondo/Deepwater Horizon Investigation
- EPA and OSHA are considering regulatory changes at the federal level, including coverage for reactive chemicals, ammonium nitrate (AN), and atmospheric storage tanks.
- The Interior Department is reportedly considering changes to proposed blowout preventer rules based on the CSB Deepwater Horizon - Macondo technical report.
- OSHA expanded its Hazardous Communications (HAZCOM) standard to require warnings about combustible dust.
- OSHA has established a National Emphasis Program for refineries, chemical plants, and combustible dust following CSB reports and recommendations.
- The National Fire Protection Association has modified numerous consensus standards, including 15, 30, 35, 54, 56, 58.
- The American Chemical Society developed hazard evaluation guidelines for laboratories following the CSB's Texas Tech University investigation.
- ABET (originally the Accreditation Board for Engineering and Technology) now requires process safety as part of university engineering curricula.
- The US Treasury Department required safety oversight for hazardous contract work following the CSB's Donaldson Enterprises Inc. investigation.
- Numerous guidance documents strengthened by the American Petroleum Institute (API), the International Code Council (ICC), and the Center for Chemical Process Safety (CCPS) as a result of CSB recommendations.
- Numerous states took action on CSB recommendations through legislation and regulation to put CSB recommendations, or portions of them, in effect, in Connecticut, Virginia, Mississippi, California, Massachusetts, West Virginia and others.
- Many organizations acted to prohibit or discourage natural gas blows in power plants.
- Major corporations such as BP and DuPont have improved safety practices based on CSB recommendations.

Along with the CSB's highly respected accident reports, CSB safety videos have helped show the agency to be a respected safety leader among industry and company environment, health and safety (EHS) officials, labor, academics and safety trainers.

CSB safety advocacy has received wide public exposure in 2014, including two op-eds in the New York Times and others in the Houston Chronicle, Seattle Times, Sacramento (CA) Bee, the

Contra Costa (CA) Times and the Federal Times. Board members and key staff regularly make presentation on CSB investigation findings and recommendations to push safety improvements forward.

Among the CSB accomplishments of which I am most proud is the impact of the investigation of the Chevron Bay Area refinery of August 2012, with the release of the final report occurring January 28 of this year. Our recommendations to that state are leading to significant reforms of California's regulatory process, which state leaders and safety officials felt were necessary, given findings showing that old refineries have not been properly maintained, have run some equipment to the point of failure, and in some cases have not even implemented recommended improvements from their own engineers. Lives have been exposed to dangerous conditions, lives have been lost, and communities have been threatened with toxic releases. Thus, following the CSB's Chevron investigation findings, the State of California has tripled the number of its refinery inspectors. The State is also in the process of modernizing process safety rules for its 14 refineries. The new regulations would require employers to prevent and eliminate to the greatest extent feasible health and safety risks to employees based on our recommendations.

I believe and would ask you to consider that this list of CSB accomplishments and safety influence is a significant legacy and one that we can be proud of.

Turning to internal issues, I want to bring the Committee up to date on the details of the governance recommendations of the former House Energy and Commerce Committee ranking member Henry Waxman, long a supporter of the CSB, as presented to us in May of last year. Below is a summary of each recommendation and the CSB's progress to date. A full listing of the recommendations can be found in Attachment 2.

- 1. Regular Briefings and Meetings: The Chairperson should provide, and board members should attend, a weekly leadership meeting where updates are provided on ongoing investigations. If further information is required on behalf of board members an additional briefing should be scheduled.*

As recommended, the Chairperson has held weekly leadership team meetings (which the board members regularly attend). At these meetings, staff have updated the members on all ongoing projects. In addition and going beyond the recommendation, the staff established a SharePoint site where they provide the board members with weekly reports on their activities and projects.

Consistent with the Waxman recommendation, the Chairperson has also convened additional non-deliberative briefings with the board members on topics of interest. For example, on December 2, 2014, the Board received a special briefing of approximately two hours on the status of all open safety recommendations and the progress of the program.

On January 7, 2015, a special one day meeting was convened for new board member Manny Ehrlich, with all board members in attendance, covering all programs and activities of the agency. A similar meeting was held on February 18 and 19, for new member Rick Engler.

Finally, the chairperson has been conducting one-on-one meetings with each Board Member for unfiltered discussions. The agency also engaged a consultant firm to provide facilitation, coaching, and advisory services for federal agencies, in order to promote internal comity. The consultants have held one-on-one meetings with the Chairperson and separately with each Board Member.

- 2. Other Agencies: Board members should be informed if another agency requests documents etc. Any decision to challenge the request should be discussed with all board members.*

There have not been any nonroutine requests for documents or information from the CSB since this recommendation was issued. However, the Chairperson has committed to all the Waxman recommendations, and would adhere to the suggested process for handling any such request.

- 3. Memorandum of Understanding (MOU): A consensus approach should be developed for MOUs; board members should be updated on the status of MOU negotiations.*

Most Recent Action: On July 24, 2014, representatives from the CSB, DOJ and EPA serving as participants to the MOU discussion met by conference call to discuss the three agencies' concerns about various aspects of the latest draft of the MOU. Despite ongoing email dialogue among the representatives, and a continually expressed interest in resuming what have been friendly and collaborative discussions, no further meetings have been scheduled.

- 4. Chevron Investigation: Issues involving the Chevron investigation should be resolved and the board should come to an agreed upon path forward.*

The CSB assigned a senior staff person to resolve the issues that had stalled the Board's second Chevron report. The Chairperson met repeatedly with the other sitting member at the time to work out an agreement. Following these meetings, the board members reached total consensus on the issues and voted unanimously to approve the Chevron regulatory report on November 5, 2014. A third and final report on Chevron, handling issues of emergency response and industry standards, was also unanimously approved on January 28, 2015, and the Chevron case was closed.

- 5. Investigations Plan: A plan should be developed for investigations by July 31, 2014.*

Numerous actions were taken to address the investigative case backlog, most notably, completing many cases with final reports issued to the public. To date the CSB has reduced the backlog from 22 open investigations to just six cases. Among the cases that are currently open, the majority are less than two years old.

- 6. Investigations Protocol: Board members should establish a plan to update the investigations protocol by July 31, 2014.*

A staff committee was assembled last year to update and develop new recommended sections for the investigative protocol. A new section of the protocol on "Investigation Scoping" was approved by the Board on January 28, 2015. An additional section of the protocol on "Work Product Review" is being readied for approval by the Board. The staff committee has also established goals in the agency's annual action plan to present the Board with new chapters on

(1) Product Development; (2) an update to existing Chapters A-F, which largely covers deployment and site procedures, and have not been refreshed for a number of years. All these actions are slated for completion during FY 2015.

Many other substantive Board procedures have been developed and approved during my term. These include Board Orders on employee participation in accident investigations, victim family member interactions during investigations, standardized procedures for analyzing the causes of accidents, and Board advocacy for recommendations through an agency “most wanted” program that is patterned on NTSB best practices.

7. *Disputed Board Order 28: Disagreement over Board Order 28 should not interfere with implementation of these recommendations. Board members should seek consensus on all appointment decisions.*

As noted by Rep. Waxman, at the time of the May 2014 recommendations there was a dispute among certain members concerning the validity of “Board Order 28” – a procedure developed in 2002 that purported to limit the authority of the Chairperson to appoint staff and take other administrative actions. Following a legal opinion that noted that Board Order 28 had been improperly adopted in 2002 (the newly appointed Chairperson and another new member had not been permitted to vote on the proposed order), the Board voted on January 28, 2015, to rescind this order and affirm the authority of the chairperson over staff appointments and other administrative issues, subject to consultation between the chair and the other members, as recommended by Mr. Waxman. This position was consistent with numerous federal laws and regulations vesting administrative authorities in the agency head, as well as the longstanding practices of similar agencies such as the NTSB.

Notwithstanding these developments on Board Order 28, the Chairperson has sought consensus with other member(s) on senior staff appointments. Only one senior staff appointment has been made since May 2014, but the Chairperson provided her background information and qualifications to the other sitting member and solicited his views prior to appointing her to supervise even a small, two-person program.

While the CSB investigation and support staff have worked diligently to produce quality reports, and while surveys show they have a firm commitment to the mission of the CSB and a majority feels they are held accountable for the work they do, the fact is that Office of Personnel Management (OPM) employee surveys show overall low employee morale. This frankly has been a conundrum and a grave disappointment for me — that public servants would work so hard but yet suffer low morale and feel a lack of appreciation within the office for the work they do.

Based on the OPM surveys and employee concerns and suggestions, I authorized last year the formation of a Workplace Improvement Committee (WIC). Senior management left the operation of the committee entirely to the employees. They have met often and have proposed numerous reforms and changes which, when fully implemented, are aimed at improving the work culture and on-the-job satisfaction and morale of our staff.

The group has created a set of six internal reform activities with supporting action plans. These are:

1. Development of CSB “Best Practices”: This includes cataloging institutional knowledge such as training resources, contractor reviews and outreach contacts.
2. Clarifying employment policies: The WIC will compile existing policies and clarify any ambiguities and recommend revision to internal policies such as teleworking and alternative work schedules.
3. A written plan for new employees outlining their introduction to the agency over the course of his or her first month on board.
4. Communications training, including learning how to participate in a structured, productive discussion on any professional topic, regular meetings to build camaraderie among offices, and communication and training for staff on how to participate in groups.
5. Investigations Product Style Guide and Citations: The WIC will supervise the development of a macro form that will automatically format citations for final reports and products.
6. Streamlining the Deployment Process: Development of agency best practices for organizing a deployment to include travel arrangements, organization of gear, transportation of equipment and hiring of outside experts.

It is important to note that the WIC works from the employee-level up and is fashioned to produce the most effective improvement and buy-in from all staff members. I am very enthusiastic about, but more to the point, so are our employees who see a way to improve the work environment. I fully endorse the committee’s six initiatives, and the committee is already working to implement them. The six initiatives are on our agency action plan for completion this fiscal year.

In summary, I am proud of the very many accomplishments the CSB board and staff have effected over the past nearly five years. I feel some of the criticisms of the way in which I have attempted to steer the course of the agency have been unfounded, from my perspective. But as I said, I do take to heart the concerns of this Committee and to that end I stand committed to work collegially with my fellow board members until June 24th and continue these improvements and the fine work of the CSB.

The CSB accomplishments – major accident investigations turned into outstanding reports, recommendations being adopted, CSB outreach through videos and public media – the outstanding core work of the agency should not be overshadowed.

As someone who immigrated to America from Colombia, becoming a citizen in the 1960’s, working with labor on health and safety issues and later in academia, it has been my honor to serve on this board.

ATTACHMENT 1:

Twenty Two Investigation Reports Completed During Chairperson Moure-Eraso's Term (2010-2015)			
Investigation	Key Issues in Final Report	Date Report Approved by CSB Board	"X" Indicates Release of Accompanying Safety Video
1. Bayer Crop Science, Institute, WV	Process hazard analysis, pre-start-up safety review, process safety information and training	1.20.2011	X
2. Kleen Energy, Middletown, CT	Elimination of the large release of flammable gas in the presence of workers	6.28.2010	X
3. Xcel Energy, Georgetown, CO	Safe limits for working in confined space flammable atmospheres, pre job safety planning	8.25.2010	X
4. DuPont, Belle, WV (3 incidents)	Mechanical integrity, alarm management, operating procedures and company emergency response notification	9.20.2011	X
5. Veolia, West Carrollton, OH	Unsafe building siting, atmospheric relief systems and plant emergency procedures	7.21.2010	
6. Goodyear, Houston, TX	Emergency response and accountability, maintenance completion	1.27.2011	
7. Public Safety at Oil and Gas Storage Facilities, TX, MS & OK	Security measures are insufficient at exploration and production facilities	10.27.2011	X
8. Hoeganaes (3 incidents), Gallatin, TN	Hazard recognition and training, engineering controls, fire code enforcement	1.5.2012	X

9. E.I. DuPont de Nemours & Co Inc., Buffalo, NY	Flammable gas monitoring, tanks isolations and hot work permits	4.19.2012	X
10. Texas Tech University, Lubbock, TX	Laboratory safety management for physical hazards, hazard evaluation and organization accountability and oversight of safety	10.19.2011	X
11. Donaldson Enterprises Inc., Waipahu, HI	Hazards of fireworks disposal, lack of regulations and industry standards addressing disposal, insufficient contractor selection and oversight	1.17.2013	X
12. Carbide Industries, Louisville, KY	Facility siting, normalization of hazards, and inadequate consensus standards	2.7.2013	
13. Chevron I, Richmond, CA	Chevron process safety programs, mechanical integrity industry standard deficiencies	1.19.2013	X
14. Tesoro, Anacortes, WA	Tesoro process safety culture, control of nonroutine work, mechanical integrity industry standard deficiencies	5.1.2014	X
15. Deepwater I/II, Gulf of Mexico	Blowout preventer (BOP) technical failure analysis, barrier management and safety critical elements	6.5.2014	X

16. NDK, Belvidere, IL	Pressure vessel design and material selection requirements, inspections and learning from previous accidents	11.14.2013	X
17. AL Solutions, New Cumberland, WV	Hazard recognition and training, federal combustible dust oversight	7.16.2014	X
18. Educational Lab Safety, Reno, NV and Denver, CO	Eliminate use of bulk containers during lab demonstrations, implementation of strict safety controls	10.30.2014	X
19. Chevron II, Richmond, CA	Regulation of refineries in California: reduction of risks to As Low as Reasonably Practicable (ALARP); importance of transition from activity based to goal based risk reduction	11.10.2014	
20. US Ink, East Rutherford, NJ	Combustible dust, engineering design, management of changes, process hazard analysis	1.15.2015	
21. Millard Refrigerated Services, Theodore, AL	Design of ammonia refrigeration systems, effective emergency shutdown procedures	1.15.2015	X
22. Chevron III, Richmond, CA	Gaps in current industry guidelines and shortcoming in Chevron's safety culture and emergency response	1.28.2015	

**Recommendations from Rep. Henry A. Waxman to
The Chemical Safety Board**

May 2, 2014

Regular Briefings and Meetings: The Chairperson should provide, and board members should attend, a weekly leadership meeting. At these meetings, senior CSB staff should provide an update on the status of major projects. The Chairperson should ask the board members prior to the leadership meeting whether there are topics they would like addressed and should ensure they are covered in the meeting.

The board members should request additional nondeliberative briefings if they believe there are issues that were not adequately addressed at the weekly leadership meetings. The Chairperson should facilitate prompt scheduling of any requested briefings.

In addition, the Chairperson should meet individually with each board member at least once a month.

Other Agencies: The Chairperson should inform the board members when another federal agency makes a nonroutine request for documents, information, or action from the CSB (unless the request relates to an internal investigation of the CSB and the investigating body has requested confidentiality). Any decision to challenge or reject a request should be elevated to the board for consideration.

MOU: The Chairperson should consult with the board members to develop a consensus approach to the interagency negotiations going forward (under EO 13650) to develop a Memorandum of Understanding. The Chairman should ensure the board members are briefed monthly on the status of the MOU negotiations and keep them apprised when major developments occur. The final MOU should be brought before the board for approval.

Chevron Investigation: The Chairperson (or a mutually agreed senior staff person) should meet individually with the board members to resolve concerns about the Chevron investigation report and to develop a proposal that could be brought before the board and adopted by consensus. If consensus cannot be reached on all matters, the Board should act on the items for which agreement exists. This proposal should be developed in time to be brought before the board for action as soon as feasible but no later than May 30, 2014.

Investigations Plan: The Chairperson should consult with the board members to establish a mutually agreed investigations plan for the agency. This plan should be established as expeditiously as possible but no later than July 31, 2014.

Investigation Protocol: The Chairperson should consult with the board members to establish a mutually agreed process for updating the agency's investigation protocol. This process should be started as expeditiously as possible but no later than July 31, 2014.

Board Order 28: There is a debate over the powers of the Chairperson and the board members under Board Order 28, which has the potential to interfere with implementing these recommendations. If there is a vacancy in the senior staff that would be subject to Board Order 28, the Chairperson and board members should seek consensus on the appointment as a matter of comity, thereby avoiding a need to resolve disputes about the application of the board order to appointments and the respective rights of the Chairperson and board members on this matter.

Chairman Rafael Moure-Eraso



Moure_FinalRafael Moure-Eraso was nominated by President Barack Obama to the U.S. Chemical Safety Board in March 2010 and confirmed by the Senate in June 2010.

Prior to his appointment, Mr. Moure-Eraso served as a Professor and Graduate Coordinator for the Department of Work Environment in the School of Health and Environment at the University of Massachusetts Lowell, where he has been Chair of the department for the last five years. He has been a member of the faculty at the University of Massachusetts for twenty two years --12 as an Associate Professor (1988) and 10 as a full Professor since 2000. From 1993-2000, Dr. Moure-Eraso was a Visiting Lecturer in Occupational Health at the Harvard School of Public Health. In 1994-95, he held an Intergovernmental Personnel Assignment at the U.S. Department of Labor as a special senior advisor on the prevention of chemical exposures to the Assistant Secretary for Occupational Safety and Health (OSHA). Prior to joining the University of Massachusetts Lowell, Dr. Moure-Eraso served for 15 years (1973-1988) as an Industrial Hygienist Engineer with the national offices of two international unions: the Oil Chemical and Atomic Workers (OCAW) and the United Automobile Workers (UAW).

His ten years as an Industrial Hygienist of the OCAW gave him substantial field experience in the Chemical and Petro-Chemical industry. Dr. Moure-Eraso has been a member of the National Advisory Committee on Occupational Safety and Health for OSHA and a member of the Board of Scientific Counselors of the National Institute for Occupational Safety and Health (NIOSH). He also was a member of both the National Advisory Environmental Health Sciences Council and the Board of Scientific Counselors to the National Toxicological Program for the National Institute of Environmental Health Sciences at the National Institute of Health (NIEHS).

He holds B.S. and M.S. degrees in Chemical Engineering (University of Pittsburgh '67, Bucknell University, '70) and an M.S. and Ph.D. in Environment Health (Industrial Hygiene) (University of Cincinnati '74, '82). He has been a Certified Industrial Hygienist for Comprehensive Practice (CIH) since

1985. Dr. Moure-Eraso is a senior member of AIChE, AIHA, ACGIH and APHA where he had held national leadership positions.