STATEMENT OF

Roger O. McClellan
Advisor, Toxicology and Human Health Risk Analysis
Albuquerque, New Mexico

Before the

Subcommittee on Superfund, Waste Management and Regulatory Oversight
Committee on Environmental and Public Works
U.S. Senate

Hearing Purpose:

a) Oversight related to the panels and processes by which the Environmental Protection Agency receives independent advice

b) Review of S.543, the Science Advisory Board Reform Act of 2015

May 20, 2015

Good Morning, Mr. Chairman and Members of the Subcommittee. Thank you for the invitation to present my views on the importance of independent scientific advice and an effective and efficient Science Advisory Board to inform the Environmental Protection Agency's policy decisions and regulations.

My biography is attached to this statement (Attachment 1). Since 1999, I have served as an Advisor to public and private organizations on issues related to air quality in the ambient environment and workplace drawing on more than 50 years of experience in comparative medicine, toxicology, aerosol science, and risk analysis. Prior to 1999, I provided scientific leadership for two organizations – the Chemical Industry Institute of Toxicology (1988-1999) in Research Triangle Park, NC and the Lovelace Inhalation Toxicology Research Institute (1966-1988) in Albuquerque, NM. The Chemical Industry Institute of Toxicology (now The Hamner Institutes for Health Sciences), was a not-for-profit research organization funded primarily by the chemical industry. The Lovelace Inhalation Toxicology Research Institute, continuing today as part of the Lovelace Respiratory Research Institute, was a non-profit research institute funded with both public and private funds. Both organizations, under my leadership, earned an international reputation for developing scientific data that informed the setting of important occupational and environmental health standards. During my career, I have held adjunct faculty appointments at 8 different universities and held major leadership roles in scientific organizations with membership from all sectors of the economy. I make this point since, in my opinion, the USA is fortunate to have many well-qualified scientists in all sectors of Society.

In my opinion, sound scientific advice from highly competent scientists and engineers is critical to the successful functioning of any science-based enterprise operating in the public or private sector. This includes the Environmental Protection Agency that develops policies and regulations that have substantial impact on the health and well-being of the American public, including those mediated through the U.S. economy. The EPA's policy decisions and the resultant promulgation of regulations must be informed by the best available scientific information independent of any preconceived ideological inclination as to a particular policy or regulatory outcome.

The testimony I offer today also draws on my experience serving on numerous scientific advisory committees for government agencies, academic institutions, non-profit entities, trade associations and private companies. This has included service on advisory committees to all the major federal agencies concerned with health issues, including service on many EPA Scientific Advisory Committees starting soon after the U.S. Environmental Protection Agency (EPA) was created by President Richard M. Nixon by Executive Order.

At the time EPA was created, I was serving as Chair of the Environmental Radiation Exposure Committee to the U.S. Public Health Service (USPHS). When the USPHS radiation protection activities were transferred to the new EPA, the Environmental Radiation Exposure Advisory Committee became advisory to the EPA along with dozens of other Advisory Committees that had operated as part of EPA's predecessor Agencies, such as the National Air Pollution Control Administration. The Bureau of the Budget, the predecessor to the current Office of Management and Budget, noted the large number of Advisory Committees and the

hundreds of consultants. The Bureau of Budget thought there must be a more efficient way for the new Agency to secure scientific advice. The EPA responded, after seeking informal consent from the Congress, by creating a Science Advisory Board (SAB) under the Chairmanship of the late Dr. Emil Mrak, then Chancellor of the University of California-Davis. The new SAB had umbrella committees organized along disciplinary lines; the key committees were Health, Engineering, and Ecology. I argued for an alternative structure with committees organized by issues or media. However, I lost the argument, with my colleagues noting that "birds of a feather" are comfortable together, and that Academic institutions are organized by disciplines. Recognizing that the radiation science field is different, that specific Committee was retained and I joined the SAB Executive Committee. Thus began my long involvement with EPA and its advisory processes.

In one of my files I have a photograph of Administrator William Ruckelshaus providing me a certificate confirming my appointment as Chair of the EPA's Environmental Radiation Exposure Committee. As expected, most of the early advisory attention focused on each Committee advocating for a bigger share of the budget from the EPA's newly created centralized Office of Research and Development. Only later would the SAB become involved with the other programmatic offices.

One of the first major issues EPA management brought to the SAB involved airborne Pb. The Natural Resources Defense Council (NRDC) had sued the EPA to have Pb listed as a criteria air pollutant under the Clean Air Act Amendments of 1970. When EPA lost the suit at the Appeals Court, it had to proceed with developing a Criteria Document to support its issuance of a National Ambient Air Quality Standard for Pb. Administrator Douglas Costle, on the advice of Dr. Mrak as Chair of the SAB, asked me to chair an *ad hoc* Committee to review the draft criteria document on airborne Pb. The Administrator appointed an appropriately diverse committee with multiple scientific and engineering disciplines represented. Within a week of the appointments being announced, I received a telephone call from one of the prospective Committee members telling me that he had two problems with the Committee. One problem, as he expressed it, was that two committee members were "lackeys or toadies of industry." The second problem of concern to him was my serving as Chair – "I do not think you will advocate for a stringent airborne Pb NAAQS." At the time I was an employee of the Lovelace Medical Foundation in Albuquerque, NM managing an Atomic Energy Commission funded program on the toxicity of airborne materials. I suggested that if the prospective member had any problems with the composition of the Committee or chairmanship he should contact Administrator Costle. Needless to say, the deliberations of the Committee, and especially the hallway conversations, were contentious. As the deliberations proceeded, the EPA wisely decided to remove the recommendation of a specific Pb NAAQS from the criteria document, recognizing that the level of the standard and averaging time were policy decisions that should be informed by science and not made by scientists. It is noteworthy that a significant amount of Committee time was spent receiving public comments. I am proud to note that when the *ad hoc* airborne Pb standard committee concluded its work, the lead attorney from the NRDC congratulated me on my leadership of the Committee.

Forty five years later I have five major concerns with EPA's Advisory Committee activities: (a) the role of academic scientists versus scientists employed or engaged by industry,

(b) the important distinction between offering scientific advice to inform policy decisions versus scientists making and/or endorsing policy decisions, (c) the role of the SAB in offering independent science advice versus responding only to EPA requests for advice, (d) the role of the SAB committee activities as a forum for public comment, and (e) the need for a strong SAB Executive Committee to enhance the effectiveness of the multiple committees operating under the SAB umbrella.

Over the subsequent years, I have been a member of several dozen EPA Advisory Committees, including serving as Chairman of seven Committees and more than 20 years of service on the SAB Executive Committee. In those early decades, the SAB Executive Committee – consisting of about 12 individuals who chaired the major SAB committees or had at-large appointments – played a valuable role in coordinating the activities of multiple committees and, most importantly, advising the EPA Administrator on major scientific issues. This included the SAB offering both unsolicited advice and independently recommending the initiation of important advisory functions. I am disappointed that the current EPA SAB apparently no longer has that kind of Executive Committee.

I am proud to say that the activities of the *ad hoc* Committee that reviewed the Pb Criteria Document, which I noted earlier, had a small role in the Congress amending the Clean Air Act in 1978 to formally require the EPA Administrator to appoint a Clean Air Scientific Advisory Committee (CASAC). I am pleased to have served both as Chair of CASAC (1988-1992) and in one of the seven positions mandated by the Clean Air Act and as a consultant on numerous CASAC Panels that considered all of the criteria pollutants. I note the role of both members of CASAC and consultants. In my opinion, the appointment of CASAC members and consultants deserves equal attention. The consultants frequently out-number the seven CASAC members that are legislatively mandated. My last CASAC service was on the Particulate Matter (PM) Panel (2000-2007). The CASAC and the PM Panel struggled over the distinction between offering scientific advice and attempting to mandate the specific level of the NAAQS for $PM_{2.5}$. The majority of the Panel wanted to advise the Administrator that the annual $PM_{2.5}$ National Ambient Air Quality Standard (NAAQS) must be reduced from 15 $\mu g/m^3$ to 14 $\mu g/m^3$ or lower. I was a minority on the Panel, arguing that the specific concentration level and statistical forms of the NAAQS were inter-related policy decisions that should be informed by science; however, the level and form are ultimately policy judgments that can only be made by the EPA Administrator. Science alone cannot identify the concentration and statistical form requisite to setting a NAAQS consistent with the language of the Clean Air Act. I have addressed this issue in a paper I authored entitled "Role of Science and Judgment in Setting National Ambient Air Quality Standards: How low is low enough?" *Air Quality and Atmospheric Health* 5: 243-258, 2012.

In addition to serving on numerous EPA Advisory Committees, I have served on Advisory Committees to essentially all of the federal agencies that are concerned with environmental and occupational factors influencing the health of individuals and populations. I have also served on various committees of the National Research Council and the Institute of Medicine of which I am a member. In many cases, the issues at hand have been at the interface between the physical and engineering sciences and the biological and medical sciences. Each of these disciplinary areas has different traditions and approaches to defining what is known and

unknown on a given subject. Issues in the life sciences are especially contentious because they are at the interface of science, the environment and health, where different individuals, including scientists, have strong personal ideological views as to a preferred policy outcome or regulation.

It is my professional opinion that scientific advisory committees offer the most useful advice to inform public policy when they examine all the scientific evidence relevant to the issue at hand, identifying the strengths and weaknesses of various facets of the science, including differences in the opinions of individual Board or Committee members on specific scientific matters. I am concerned that the differences in scientific views among Committee members are frequently down-played in a rush to create a consensus opinion. It is my view that consensus is best left to ideologically-based institutions such as religious organizations, labor unions and political parties. "Consensus" positions in the life sciences are frequently based on ideological positions and pressure, not necessarily science alone.

An issue of major concern for scientific advisory committees, irrespective of the issue being addressed, is how the deliberations and actions of the Committee are influenced by funding that the Committee members have received in the past or may receive during the course of future employment. This issue is of heightened interest as institutions, in both the public and private sectors, increasingly face severe constraints on financial support for scientific research. Indeed, the top priority for many organizations that are science-based is what can be done to make certain their scientific constituency receives its "fair share" of funding.

Many scientists hold the view that funding from federal agencies comes with no strings attached, while anyone receiving private sector funding is somehow indentured. In short, some individuals argue that academic scientists are free of bias and conflicts of interest, while industry affiliated scientists automatically have biases and conflicts of interest. I think such a viewpoint is open to question when the funding agency, such as the EPA, is also a regulatory agency. In my opinion, the agency needs to focus on reducing scientific uncertainty on a range of issues and take special precautions to avoid creating a funding environment focused on identifying new crises or creating more stringent regulations. In my opinion, the creation of a more stringent standard or regulation should not be viewed as a criterion of success for scientific research or scientific advisory bodies. Alternatively, I argue that the criterion of success for an advisory committee should be whether it appropriately examined all the scientific evidence, including both the strengths and weaknesses, so the information could inform policy judgments.

As an aside, I am of the opinion that private sector funding is of critical importance to advancing scientific knowledge and its application. However, the interface between industry-funded science and its use in informing policy decisions needs the same kind of scrutiny as the science created with public funding.

Let me return to the importance of distinguishing between an advisory committee's evaluation of the science, on the one hand, and its entering into the policy arena and offering policy judgments, on the other hand. This is dangerous turf because many policy makers would like to say the science "dictated" the outcome on specific difficult policy decision; that the Administrator was a mere bystander to the science. I addressed these issues in the paper I noted earlier.

An important underlying concern for the use of science to inform policy decisions is access to the underlying data for review and, indeed, re-analysis by others. This is an issue addressed in Senate Bill 544. In my opinion, any science used in the federal regulatory process should have been published in a high-quality peer-reviewed journal and, equally as important, the underlying data must be available to other qualified scientists for review and potential re-analysis. Key data used in the setting of several of the NAAQS in the past have not always met the second test. As one academic scientist noted, "I do not want some industrial-hired gun wading through my data." I applaud the Johns Hopkins University team that created the National Morbidity and Mortality Air Pollution (NMMAPS) data set, used extensively in the setting of several NAAQS, for making that data set publicly available to others. My colleague, Dr. Suresh Moolgavkar, and I have recently used the NMMAPS data set to explore alternative approaches to data analysis (Moolgavkar, SH, McClellan, RO, et al, Time-Series Analyses of Air Pollution and Mortality in the United States: A Subsampling Approach. *Environ. Health Perspectives* 121(1): 73-78, 2013.). I am concerned that in recent years the use of the NMMPS data has been constrained.

Likewise, I applaud the National Institute of Occupational Safety and Health (NIOSH) and the National Cancer Institute (NCI) for seeking ways to make the Diesel Exhaust in Miners Study (DEMS) available to qualified investigators. Initiated in the early 1990s, DEMS was completed in 2012 with the publication of five exposure assessment papers and two seminal epidemiological papers (Attfield et al, The Diesel Exhaust in Miners Study: A Cohort Mortality Study with Emphasis on Lung Cancer, *J Natl Cancer Inst 104*:1-15, 2012; Silverman et al, The Diesel Exhaust in Miners Study: A Nested Case-Control Study of Lung Cancer and Diesel Exhasust, *J Natl Cancer Inst 104*:855-868, 2012)). The complete data set acquired by federal employees and collaborators at a cost of over $12 million needs to be made available and evaluated by other scientists before it is used to establish federal regulations and standards. I am pleased that NCI ultimately released the key exposure assessment data in response to a Freedom of Information Act request and that both NCI and NIOSH developed ways for qualified scientists to access the DEMS epidemiological data.

With leadership from my colleague, Dr. Kenny Crump, the exposure assessment that is a crucial component of DEMS has been evaluated with funding from a coalition of industry trade associations (Crump, K. and C. Van Landingham, Evaluation of an Exposure Assessment used in Epidemiological Studies of Diesel Exhaust and Lung Cancer in Underground Mines, *Crit. Reviews in Toxicol.* 42(7):599-812, 2012). Dr. Crump identified major flaws and uncertainties in the methodology used in the original exposure assessment. Subsequently, with funding from an industry coalition, Dr. Suresh Moolgavkar and Dr. Kenny Crump replicated the epidemiological analyses of the original DEMS investigation and, more importantly, conducted additional analyses using alternative methods and exposure assessments, which have been published in peer-reviewed journals (Moolgavkar et al, Diesel Engine Exhaust and Lung Cancer Mortality – Time Related Factors in Exposure and Risk, *Risk Analysis*, in press, 2015; Crump et al., Reanalysis of the DEMS Nested Case-Control Study of Lung Cancer and Diesel Exhaust: Suitability for Quantitative Risk Assessment, *Risk Analysis*, in press, 2015). These analyses revealed major uncertainties in estimates of excess lung cancer risk associated with exposures of

non-metal miners to diesel exhaust over and above that associated with the primary well-established risk factor – cigarette smoking.

The critical question now is how both the results of the original NIOSH/NCI investigators and the subsequent results of Drs. Moolgavkar and Crump, using the same DEMS data set, will be evaluated and used to inform subsequent scientific analyses, such as their potential use in quantitative risk analysis and to inform public policy decisions and regulatory actions by EPA, NIOSH, the Occupational Safety and Health Administration and the Mine Safety and Health Administration. I have urged that the results of all the analyses should be considered on a level playing field, irrespective of when they were conducted, who conducted the analyses, or if they were conducted with public or private funding. Other individuals have advanced the view that the analyses conducted with industry support should be viewed as secondary because the industry support was alleged to focus on obtaining particular outcomes. These questions are being addressed by a Panel organized by the Health Effects Institute, a non-profit entity jointly funded by EPA and the private sector, primarily the manufacturers of combustion engines. That Panel's report will be of special interest since the hurdle of access to data was cleared allowing the Panel to focus on evaluating the results of the original investigators and subsequent analyses by other independent scientists.

Before leaving my discussion of service on EPA Advisory Committees, I would like to briefly note an EPA Committee I did not serve on – the CASAC Ozone Panel whose deliberations started in the early 2000s and concluded in 2008. When the CASAC Ozone Panel was being formed, I was encouraged by the Chair of CASAC to self-nominate for service on the Panel. I did so. Some months later I received a call from a Reporter asking if I had seen the letter a prominent ENGO had sent to SAB concerning my services on the Panel. I said no. He said you need to see the comments; they are not very flattering. I promptly called the SAB offices and inquired about the letter. The SAB staffer acknowledged receipt of not one, but two letters concerning my potential service and that of two well-qualified colleagues. I asked if he would share the letters with me. His response was "I think you will need to file a Freedom of Information Act (FOIA) request." I told him "That is ridiculous – my fax machine is available and if I did not receive the letters within an hour I will take the matter up with the Administrator and my elected Senators and Representatives." I promptly received the letters via fax. The letters from two different ENGOs were virtually identical. They questioned how I could be considered for membership on a CASAC Panel when I had previously served as President and CEO of the Chemical Industry Institute of Toxicology, a research laboratory principally funded by the chemical industry. To top it off, they suggested I was not qualified professionally to serve on the Panel since – "he was trained as a Veterinarian."

While I can appreciate that an agency may wish to solicit comments on nominees to particular Committees, I think it should be with the understanding that any comments received by the Agency will be shared with the nominee. Indeed, if an organization is moved to comment on a nominee, the organization should be willing to directly confront the nominee by sharing its concerns directly with the nominee. Appointments to scientific advisory committees should be made in an open and transparent manner and not influenced by *sub rosa* innuendos as to their qualifications. I will never know if those two letters influenced the Agency's decision to not appoint me to EPA's CASAC Ozone Panel.

I appreciate the Subcommittee on Super Fund, Waste Management and Regulatory Oversight of the Committee on Environment and Public Works holding this hearing and addressing the important topic of the processes by which EPA receives independent scientific advice, including the important role of the Science Advisory Board. I view this topic as part of a much bigger picture – how do we move the economy of the USA forward building on this nation's remarkable pool of scientific talent?

Let me provide some context for this statement. I am regularly asked by fellow scientists, including those at regulatory agencies, as to what I think are the most important factors influencing human health. In some cases, the question is framed relative to revision of the National Ambient Air Quality Standards for particulate matter or ozone or some specific chemical. My answer is simple – in my opinion, the single most important risk factor for the health of the U.S. citizens and other populations around the world is their SOCIO-ECONOMIC STATUS (SES). Jobs and income matter! A study by Steenland et al (2004) showed that the mortality ratio for all-cause mortality for men in the lowest quartile of SES over the top quartile is about 2.00 (Steenland, K. and J. Walker, All-Cause and Cause-Specific Mortality by Socioeconomic Status Among Employed Persons in 27 US States, 1984-1997, *Am. J. Public Health 94(6):* 1037-1042, 2004). In other words, there is a doubling of the mortality rate for individuals in the lowest quartile of SES versus those in the top quartile. Putting it another way, moving from the bottom quartile to the second quartile reduced the mortality ratio to 1.69 and a move from the second to the third quartile reduced the mortality ratio to 1.25. In short, an optimal way to improve the health of Americans is to create employment – JOBS.

Some individuals reading this may argue that I am off track relative to the topic subject of this hearing. I am on track – let me explain.

The USA has a remarkable pool of scientific and engineering talent. We have excellent colleges and universities that attract students from around the world, including the world's most rapidly advancing economy – China. Historically, well-educated individuals have found an abundance of job opportunities in the USA. Indeed, many students who came from abroad elected to stay in the USA for the opportunities it affords. The current job market for professionals in the USA is the softest I have seen during my professional career spanning a half century. While I am optimistic the situation can change, major change will require many small and seemingly insignificant changes.

One change that is required is to start using ALL of the USA's scientific and engineering talent as candidates to serve as members or consultants on Scientific Advisory Committees such as those assembled by the EPA. In the past, EPA's scientific advisory committees have been composed largely of academic scientist and engineers. Using information from the EPA SAB website, I note that for the standing SAB only 2 individuals are affiliated with commercial firms, 3 individuals are apparently private consultants, 3 individuals are with NGOs, 3 individuals are with State Agencies and 36 individuals are affiliated with academic institutions. The SAB has 7 Standing Committees listed on its website with a total of 115 members. Some of these individuals are also on the primary SAB. Only 3 of these individuals are affiliated with major commercial firms selling products or commercial services, eight individuals are independent

consultants or with consulting firms, 7 are affiliated with State agencies, and 100 members are affiliated with academic institutions. I know many of these academicians personally; they are first-rate scientists or engineers. Do they represent the best and brightest of all the scientists and engineers in the USA? The answer cannot be Yes, since that would mean the millions of scientists and engineers employed in the private sector somehow do not measure up to the academic scientists.

Some will quickly note that those in the private sector have financial conflicts of interest that preclude their service on EPA Advisory Committees because of requirements of the Federal Advisory Committee Act (FACA). If FACA is used to deny the EPA of the talents of individuals from the private sector, then I think the solution is quite simple – Congress should change FACA. Some academic scientists and EPA managers would argue that individuals in the private sector are biased – their primary motivation is making certain their employer does the right thing and stays profitable. I am glad they have that motivation, it is important. It is consistent with the best interests of the USA. I have worked with many private sector firms and employees. I can assure you they understand the importance of getting the science right to ensure long-term profitability. In other words, individuals employed or funded by the private sector are just as interested in the quality of scientific information and seeing it used properly as are academics.

One might ask why it is important to broaden the talent pool for service on EPA's Science Advisory Board and other Advisory Committees. One good reason is context. EPA's scientific committees deal with complex issues, not abstract scientific facts; it is science interpreted and used in the context of resolving complex issues. For example, the question is not just whether a chemical or technology is hazardous, but, also how can use of the chemical be changed or the technology advanced to reduce health hazards and increase efficiency and effectiveness. Private sector scientists and engineers deal with these concepts daily and could bring the concepts to bear in EPA Advisory Committee discussions. Everyone wins when all participants contribute to the dialogue on the issue under consideration and everyone takes something home to their university or private sector job.

In this regard, I think the remarkable advances made in diesel engine technology over the last several decades are an excellent example, as covered in a paper I co-authored (McClellan, R.O., T.W. Hesterberg and J. C. Wall, Evaluation of Carcinogenic Hazard of Diesel Engine Exhaust Needs to Consider Revolutionary Changes in Diesel Technology, *Regulatory Toxicol. Pharmacol. 63*: 225-258, 2012). In the 1970s and 1980s, new toxicological and epidemiological evidence emerged pointing to the potential lung cancer hazard of exposure to diesel engines using high-sulfur fuels. There was no question that exposure to high levels of exhaust were hazardous to health. However, there was considerable debate over whether the scientific knowledge was sufficiently robust to develop quantitative estimates of risk. In the face of uncertainty, EPA made a policy decision to move forward with stringent regulations for reduced diesel engine emissions of particulate matter and nitrogen oxides, and mandated the marketing of ultra-low sulfur fuel. The engine manufacturers and fuel refiners responded to the challenge. The diesel engines marketed today meet the new standards and, in combination with use of ultra-low sulfur fuel, are contributing to cleaner air. A quantitative estimate of the lung cancer risk of the old technology was not needed to advance the technology. The question now is how rapidly

the new technology will be deployed to replace old technology on the road and in off-road applications.

In preparation for this hearing, I reviewed the SAB website to determine the status of recent activities of the Board and its seven standing Committees [Chemical Assessment Advisory, Drinking Water, Ecological Processes and Effects, Environmental Economics Advisory, Environmental Engineering, Exposure and Human Health, and Radiation Advisory Committees].

A new Agricultural Science Committee is being formed. I hope its membership will be truly representative of America's substantial agricultural enterprise. Quite frankly, I was surprised by the size of the SAB staff, the modest number of reports completed over the last decade, the infrequent meetings of some of the Standing Committees, and the relative absence of any activities that were initiated by the SAB. If I were to encounter this situation in a private sector organization I was advising, I would suggest it was time for a rigorous retrospective assessment of the entire SAB operation and its processes. This would include assessing what has been done well, what is not working, and how the SAB can be best organized and managed to provide the EPA sound, independent scientific advice to inform policies and regulations that have substantial impact on the American people and the American economy.

The Bill, S 543, "EPA Science Advisory Board Reform Act of 2015" includes provisions that will strengthen the independent role of the SAB. However, the changes required by provisions in S. 543 will need to be augmented by substantial changes initiated by EPA management to create a more efficient and effective SAB to better serve the American public.

I will be pleased to address any questions you may have now or wish to forward to me.

<u>Disclosure</u>

The foregoing statement was prepared by me and represents my independent views and advice. I gratefully acknowledge financial support provided to me by Tronox Corporation to cover my expenses related to participation in this Hearing. I advise Tronox Corporation on air quality issues. Tronox Corporation is committed to using the best available scientific information to guide its operations and to endorsing the use of the best available scientific information to inform federal policies and regulations.

ATTACHMENT 1

BIOGRAPHY

ROGER O. McCLELLAN, DVM, MMS, DSc (Honorary),
Dipl-ABT, ABVT, Fellow-ATS
Advisor: Inhalation Toxicology and Human Health Risk Analysis
13701 Quaking Aspen NE
Albuquerque, NM 87111-7168, USA
Tel: (505) 296-7083; Cell: (505) 850-9190; Fax: (505) 296-9573
e-mail: roger.o.mcclellan@att.net

ROGER O. McCLELLAN serves as an advisor to public and private organizations on issues concerned with inhalation toxicology, comparative medicine, and human health risk analysis focusing on issues of air quality in the ambient environment and work place. He has over three decades of experience studying the human health hazards of exposure to diesel exhaust and promoting advances in diesel technology to minimize any health hazards. He received his Doctor of Veterinary Medicine degree with Highest Honors from Washington State University in 1960 and a Master of Management Science degree from the University of New Mexico in 1980. He is a Diplomate of the American Board of Toxicology and the American Board of Veterinary Toxicology and a Fellow of the Academy of Toxicological Sciences.

He served as Chief Executive Officer and President of the Chemical Industry Institute of Toxicology (CIIT) in Research Triangle Park, NC from 1988 through 1999. CIIT continues today as The Hamner Institute for Health Sciences. During his tenure, the organization achieved international recognition for development of scientific information under-girding important environmental and occupational health decisions and regulations. Prior to his CIIT appointment, Dr. McClellan was Director of the Inhalation Toxicology Research Institute, and President of the Lovelace Biomedical and Environmental Research Institute, Albuquerque, New Mexico. The Institute continues today as a core element of the Lovelace Respiratory Research Institute. During 22 years with the Lovelace organization, he provided leadership for development of one of the world's leading research programs concerned with the health hazards of airborne radioactive and chemical materials. Prior to joining the Lovelace organization, he was a scientist with the Division of Biology and Medicine, U.S. Atomic Energy Commission, Washington, DC (1965-1966), and Hanford Laboratories, General Electric Company, Richland, WA (1959-1964). In those assignments, he conducted and managed research directed toward understanding the human health risks of internally deposited radionuclides.

Dr. McClellan is an internationally recognized authority in the fields of inhalation toxicology, aerosol science, comparative medicine, and human health risk analysis. He has authored or co-authored over 350 scientific papers and reports and edited 10 books. In addition, he frequently speaks on risk assessment and air pollution issues in the United States and abroad. He is active in the affairs of a number of professional organizations, including past service as President of the Society of Toxicology and the American Association for Aerosol Research. He serves in an editorial role for a number of journals, including service since 1987 as Editor of Critical Reviews in Toxicology. He serves or has served on the Adjunct Faculty of 8 universities.

Dr. McClellan has served in an advisory role to numerous public and private organizations. He has served on senior advisory committees for the major federal agencies concerned with human health. This included services as past Chairman of the Clean Air Scientific Advisory Committee, Environmental Health Committee, Research Strategies Advisory Committee, and Member of the Executive Committee,

Science Advisory Board, U. S. Environmental Protection Agency; Member, National Council on Radiation Protection and Measurements; Member, Advisory Council for Center for Risk Management, Resources for the Future; Member, Health Research Committee, Health Effects Institute; and service on National Academy of Sciences/National Research Council Committees on Toxicology (served as Chairman for 7 years), Risk Assessment for Hazardous Air Pollutants, Health Risks of Exposure to Radon, Research Priorities for Airborne Particulate Matter, as well as the Committee on Environmental Justice of the Institute of Medicine. He has served on the Board of Scientific Councilors for the Center for Environmental Health Research of the Centers for Disease Control and Prevention and the Agency for Toxic Substances and Disease Registry and on the National Institutes of Health Scientific Advisory Committee on Alternative Toxicological Methods. He currently serves on the National Aeronautics and Space Administration Lunar Airborne Dust Toxicity Advisory Group.

Dr. McClellan's contributions have been recognized by receipt of a number of honors, including election in 1990 to membership in the Institute of Medicine of the National Academy of Sciences. He is a Fellow of the Society for Risk Analysis, the American Association for Aerosol Research, the Health Physics Society, and the American Association for the Advancement of Science. In 1998, he received the International Achievement Award of the International Society of Regulatory Toxicology and Pharmacology for outstanding contributions to improving the science used for decision making and the International Aerosol Fellow Award of the International Aerosol Research Assembly for outstanding contributions to aerosol science and technology. In 2002, he was inducted into the University of New Mexico Anderson School of Management Hall of Fame for contributions to the effective management of multi-disciplinary research organizations. He received the Society of Toxicology Merit Award in 2003 for a distinguished career in toxicology and the Society's Founders Award in 2009 for contributions to science-based safety/risk decision-making. In 2012, he received the Outstanding Career Achievement Award of the International Dose-Response Society for contributions to understanding dose-response relationships and the David Sinclair Award of the American Association for Aerosol Research for sustained excellence in aerosol research and technology.

In 2005, The Ohio State University awarded him an Honorary Doctor of Science degree for his contributions to comparative medicine and the science under-girding improved air quality. In 2006, he received the New Mexico Distinguished Public Service Award. In 2008, Washington State University presented Dr. McClellan the Regents Distinguished Alumnus Award, the highest recognition the University can bestow on an Alumnus.

Dr. McClellan has a long-standing interest in environmental and occupational health issues, especially those involving risk assessment, and air quality and in the management of multidisciplinary research organizations. He is a strong advocate of science-based decision-making and the need to integrate data from epidemiological, controlled clinical, laboratory animal and cell studies to assess human health risks of exposure to toxic materials and to inform policy makers in developing standards and guidance to protect public health.