



SUBMITTED ELECTRONICALLY

May 5, 2008

Kristine M. Krause, P.E.
Vice President - Environmental

Mr. Jon Heinrich
Wisconsin Department of Natural Resources
Bureau of Air Management
P.O. Box 7921
Madison, WI 53707

RE: Mercury Emissions from Coal-fired Power Plants – Public Health and Welfare Finding Pursuant to Wis. Stats. 285.27(2)(b)

Dear Mr. Heinrich:

By this letter, Wisconsin Electric Power Company, doing business as We Energies (“We Energies” or “the company”), is providing comments on the Department of Natural Resources (“Department”) Public Health and Welfare Finding. This Finding was prepared as part of proposed revisions to ch. NR 446, Wis. Adm. Code, relating to provisions for major coal-fired electric generating units in Wisconsin to limit mercury air emissions. It is required according to Wis. Stats. 285.27(2)(b) but will no longer be relevant once the U.S. Environmental Protection Agency (U.S.EPA) issues an emission standard promulgated under section 112 of the federal clean air act, according to Wis. Stats. 285.27(2)(d).

We Energies is the principal utility subsidiary of Wisconsin Energy Corporation. Under separate cover the company is also submitting comments on the proposed NR 446 rule revisions.

Comments submitted under this cover letter are organized into two sections, 1.) response to the Finding's failure to link reductions in Wisconsin utility mercury emissions to environmental improvements in Wisconsin, and 2.) selected responses to the Department's summary statements containing their key conclusions that support the Finding.

Overall we disagree with the finding that "a revised mercury emission standard for coal-fired [electric generating units] EGU's is necessary to protect public health and welfare from mercury exposure". This conclusion is not supported by any of the referenced studies. DNR's Finding fails to address, let alone answer, the crucial question: Are Wisconsin coal-fired power plants the sources of the mercury to which Wisconsin residents are exposed?

There is no demonstration or credible evidence that the proposed state-only utility mercury rule will reduce health risks to Wisconsin citizens nor measurably reduce mercury in Wisconsin's environment. Based on agency and peer-reviewed science, more aggressive rules in Wisconsin will not result in any measurable environmental benefits and will not reduce the number of fish advisories for Wisconsin's lakes and rivers.

Included in our comments are references to studies that have analyzed the fate of mercury emissions from coal fired power plants. Actual verified measurements of mercury deposition confirm model estimates of mercury contributed by in-state power plants to Wisconsin's environment. We are resubmitting a copy of

the June 2007 Atmospheric and Environmental Research, Inc. (AER) study on mercury deposition in Wisconsin that has been submitted along with comments on previously proposed mercury rule changes. We are also submitting a copy of a June 2003 AER study on mercury deposition from We Energies' Oak Creek and Elm Road generating units. This study has been previously submitted to the Department as part of past air and water permit proceedings.

We are not commenting on sections of the Finding related to mercury control technology and costs, or mercury emission standards in place or proposed in neighboring states. We have already prepared extensive comments on these issues as part of the previously submitted "Utilities' Response to the Citizen's Petition for the Revision and Adoption of Rules to Govern the Release of Mercury Emissions to the Air."

The remainder of our comments on the Department's Mercury Emissions from Coal-fired Power Plants – Public Health and Welfare Finding follow.

I. Section I: Response to the Public Health and Welfare Finding Pursuant to Wis. Stats. 285.27(2)(b)

DNR's Finding fails to address, let alone answer, the crucial question: Are Wisconsin coal-fired power plants the sources of the mercury to which Wisconsin residents are exposed?

Before it may promulgate an emission standard for a "hazardous air contaminant," Wisconsin law requires DNR to make a finding that the proposed standard is needed to provide adequate protection for public health and welfare. Wis. Stat. § 285.27(2)(b). In addition, the DNR may not make such a finding unless it is supported with written documentation that satisfies four requirements. One of those requirements is that the written documentation contain an analysis showing that, if DNR fails to promulgate the proposed emission standard, members of at-risk population groups will be subjected to levels of the contaminant that are above recognized environmental health standards. Wis. Stat. § 285.27(2)(b)2. The documentation must include also a finding that the chosen compliance alternative reduces risks from the emissions in the most cost-effective manner practicable. Wis. Stat. § 285.27(2)(b)3.

There is a commonsense reason why the law requires DNR to prepare such documentation before the agency promulgates emission standards. Complying with emission standards imposes costs on society (in this case utility customers) and sometimes those costs are enormous. Good public policy requires a meaningful weighing of costs against benefits. If, for example, a proposed standard will do little or nothing to reduce a contaminant's impact on at-risk members of the population, it is not in society's best interest to incur substantial costs to comply with the standard. By requiring DNR to prepare written documentation before it promulgates standards, and by requiring that such documentation contain specific analyses, the law instructs DNR: "Explain how these proposed standards will protect public health by reducing risk and explain how the standards you have chosen reduce risk in the most cost-effective manner practicable."

DNR is now preparing to promulgate standards to reduce by 90% the mercury emissions from coal-fired power plants located in Wisconsin. As the written documentation required by law, DNR has offered "Mercury Emissions from Coal-Fired Power Plants: Public Health and Welfare Finding Pursuant to Section 285.27(2)(b), Wisconsin Statutes." Unfortunately, the DNR's Finding fails to address the core concern that motivates the requirement for such documentation in the first place because it does not explain how the proposed standards for Wisconsin-based power plants will reduce health risks to which citizens of Wisconsin are allegedly exposed.

Here is the problem. Standards that reduce mercury emissions from coal-fired power plants located in Wisconsin will only reduce the alleged risk of mercury to Wisconsin residents if those power plants are in fact the source of the mercury to which Wisconsin residents are exposed. If the mercury deposited in Wisconsin comes largely from other sources, reducing emissions from Wisconsin-based plants will do little to protect Wisconsinites. The uninformed lay person may believe that mercury emitted from a power plant is bound to be deposited somewhere near the plant so that reducing emissions will reduce local levels of contamination. Such a simple view of the world does not correspond to reality. Where the mercury from a particular source ends up depends on a variety of factors, including the species of mercury emitted (which in turn depends on what kind of coal is burned); the height of stacks; and meteorological conditions, such as annual and seasonal wind and precipitation patterns. The DNR's Finding discusses many things, but it quite remarkably devotes almost no attention to this critical question: Are Wisconsin coal-fired power plants the sources of the mercury to which Wisconsin residents are exposed?

On pages 12-14, DNR's Finding contains a section entitled "Relationship between Mercury Emissions and Mercury Contamination." The title is a complete misnomer, however, because most of the section does not discuss the relationship between mercury *emissions* and mercury contamination. Rather, it deals almost entirely with the relationship between mercury *deposition* and food chain contamination. The section, despite its title, begs the essential question of whether the mercury that is deposited in Wisconsin originates from emissions by Wisconsin sources, in particular from emissions by Wisconsin based power plants that will be subject to the proposed new standards.

DNR devotes roughly one paragraph to this question.¹ Moreover, none of the sources that DNR cites in its exceedingly brief discussion actually address the question:

1. DNR cites a 2006 publication by Prestbo et al. While the Prestbo study found a statistically significant decrease in mercury deposition in the Seattle area between 1996 and 2005, it did not determine what the original source of the mercury had been. Prestbo suggests that the reduction may have resulted from the closing of several Seattle area medical waste incinerators, but he did not perform any meteorological analysis to determine whether that was indeed the case. As for any relationship between power plant emissions and mercury deposition in the Seattle area, Prestbo in fact dismisses the impact of a coal-fired power plant that was located 70 miles from Seattle. Prestbo's work does not address, let alone answer, the question whether Wisconsin coal-fired power plants are the sources of the mercury to which Wisconsin residents are exposed.

2. DNR cites three Swedish studies, Johannson et al., 2001, Munthe et al., 1995, and Munthe et al., 2001. The Johannson 2001 paper noted reductions in mercury levels in fish and in soil in Sweden but the paper did not attribute that reduction to reduced mercury emissions in Sweden. In fact, Johannson noted that "[a]bout 80% of the atmospheric deposition of metals [lead, cadmium, and mercury] in southern Sweden originates from emissions in other countries." Both the Munthe 1995 study and the Munthe 2001 study similarly noted decreases in mercury deposition in Sweden but also attributed those decreases to reduced mercury emissions on the European mainland. The Swedish studies do not address, let alone answer, the question whether Wisconsin coal-fired power plants are the sources of the mercury to which Wisconsin residents are exposed.

3. DNR cites a 2006 study by Keeler et al. for the proposition that in eastern Ohio the major contributor to mercury in rain was found to be "local and regional" coal combustion. However, the Keeler study does not identify the specific local or regional sources of the mercury depositions and does not identify whether the sources were located in Ohio or even in the eastern United States. The article simply asserts that the sources were "local or regional," without explaining how far away local/regional sources might be or what basis the authors had to attribute the coal combustion to "local and regional" sources. The Keeler study does not address, let alone answer, the question whether Wisconsin coal-fired power plants are the sources of the mercury to which Wisconsin residents are exposed.

Unlike the studies that DNR cited, there have in fact been studies that do address directly the key question: Are Wisconsin coal-fired power plants the sources of the mercury deposited in Wisconsin? Unfortunately, DNR has completely ignored those studies. One such study, "Estimating the Contributions of Coal-Fired Power Plants to the Atmospheric Deposition of Mercury in Wisconsin," was prepared by Dr. Christian Seigneur of Atmospheric & Environmental Research, Inc., (AER) and was released in June 2007. AER is an independent research and development company, founded in 1977, whose employees have extensive expertise including weather and climate prediction and dynamics, air quality and risk assessment, and remote sensing, sensor design and data analysis. AER has also developed an air quality modeling system for air toxics that has been successfully applied for mercury in

¹ Only the fourth paragraph on page 13 of the Finding and one sentence in the last paragraph on page 14 appear to discuss any linkage between Wisconsin power plant emissions and Wisconsin deposition.

spatial scales ranging from the globe to regional watersheds. Dr. Seigneur himself has over 25 years of experience in air quality studies. He conducts research for the development of new models and methodologies to assess risk and he has been an invited participant in various workshops, including the SETAC (Society of Environmental Toxicology and Chemistry) workshop on Criteria for Persistence and Long-Range Transport of Chemicals in the Environment, the Society for Risk Analysis Workshop on Probabilistic Risk Assessment, the Expert Panel on Atmospheric Processes of Mercury, and several U.S. Department of Energy and U.S. EPA workshops on air quality and risk assessment. Dr. Seigneur has developed several atmospheric chemical kinetic mechanisms including mechanisms for mercury, chromium, stack plumes and acid formation in droplets and particles. He has also published over one hundred articles in peer-reviewed scientific journals and has co-authored 200 conference papers.

AER's 2007 study updates a report they issued in 2002. The 2002 report, entitled "Modeling Deposition of Atmospheric Mercury in Wisconsin," analyzed the extent to which Wisconsin coal-fired power plants contribute to deposition of mercury in Wisconsin. The 2002 analysis used the chemical transport model TEAM ("Trace Element Analysis Model"), which is a three-dimensional model of the fate and transport of atmospheric mercury, and concluded that only 1% to 4% of the mercury deposited at northern Wisconsin mercury monitoring sites and less than 5% of the mercury deposited over most of the state was caused by emissions from Wisconsin coal-fired power plants. AER's 2007 update of its earlier analysis examined whether any work done in this area since 2002 (including the Keeler 2006 study referred to earlier) affects the conclusions that AER reached in 2002. The answer is that the results of AER's 2002 study are still valid. The mercury studies conducted since 2002 either corroborate or further validate AER's 2002 results. Those results -- we repeat -- were that less than 5% of the mercury deposited over most of Wisconsin was caused by emissions from Wisconsin coal-fired power plants.

Such results should not be particularly surprising to scientists who understand the mechanisms by which mercury travels and the role of speciation (type of mercury emitted), stack height, and meteorological conditions. In fact, AER's 2007 report cites a 2007 study by a Harvard team (Selin et al) that applied the global CTM GEOS-Chem model to estimate the contributions of North American sources to mercury deposition in the U.S. ("CTM-GEOS" stands for "Chemical Transport Model-Goddard Earth Observation System.") The GEOS-Chem results indicate that less than 20% of mercury deposition in Wisconsin is due to North American sources, let alone to Wisconsin sources. An EPA analysis, also cited by AER, used a combination of GEOS-Chem and the Community Multiscale Air Quality Model (CMAQ) to estimate the contribution of sources outside North America to mercury deposition in the U.S. The EPA analysis yielded results consistent with the Harvard team's study, namely that less than 15% of the mercury deposition in northern Wisconsin and less than 25% of the deposition in southern Wisconsin is due to North American sources. What this means, of course, is that DNR's proposed standard, despite its cost to Wisconsin, will have extremely little, if any, impact on the amount of mercury deposited in Wisconsin. Even if Wisconsin could somehow impose its will on *all* the sources of mercury in North America, mercury deposition in the state would decline by only 20% or less.

Remarkably, DNR's Finding does not even mention AER's original 2002 study of mercury deposition in Wisconsin or the 2007 update. In addition, DNR's Finding fails to mention a presentation entitled "Atmospheric Mercury Deposition" made to DNR and the Natural Resources Board as part of the Mercury Seminar conducted in Stevens Point last July. In that presentation, Dr. O. Russell Bullock of the Atmospheric Sciences Modeling Division of the National Oceanic and Atmospheric Administration made the point that coal-fired utility boilers contribute less than 10% to the total mercury deposition over most of the contiguous U.S. He also indicated that the 70% mercury emission reductions called for by CAIR and CAMR would reduce mercury deposition in Wisconsin by 10% or less. Whether the Finding's failure to address such clearly relevant studies was intentional or inadvertent, such failure calls into question any notion that the Finding might provide a rational basis for the proposed mercury emission standards. The standards target mercury emissions from Wisconsin power plants but the analysis that is directly on point demonstrates that, in general, less than 5% of the mercury deposition occurring in Wisconsin comes from

those plants. If DNR believes the AER, Harvard, and EPA studies that AER cites, as well as the Bullock presentation, are somehow flawed, it should explain why it thinks so. It is not acceptable to simply ignore this information, as DNR has done.

We understand that elected officials -- and by extension DNR -- want to "do something" about mercury. By requiring written documentation that sets forth the rational basis for proposed emission standards, the law seeks to ensure that any such standard will in fact protect the public and not simply amount to an expensive, but empty, gesture. Because it does not address the central question -- are Wisconsin power plants the sources of mercury deposited in Wisconsin? -- DNR's Finding fails to accomplish the purpose of the statutory requirement. Like the emission standards it purports to justify, the Finding is -- unfortunately -- an empty gesture.

II. Section II: Selected Responses to the Department's Summary Statements that Support the Finding

The Department's Finding includes several summary statements that are described as the key conclusions that support their finding. We provide comments on selected summary statements. The summary statements in the Finding are reprinted, and our comments follow.

3. Recent research has identified mercury effects on the immune system and a potential role of mercury exposure in elevating the risks of heart disease and heart attacks in adults.

This statement is apparently based on several *selected* health studies on this topic. Other well conducted studies have found no associations. A review² of all related studies on this subject concludes that, given the very different diets of populations studied (diets that are not necessarily representative of those in the U.S.), no firm conclusions regarding health risks among adult fish consumers can be drawn. On the other hand, recent studies³ published by researchers continue to support the practice of making fish an important component of diets for all adults and children, including pregnant women.

6. Nationally, about 5-10% of women of childbearing age have elevated mercury levels in their blood that poses a potential risk to unborn children. These risks include developmental effects such as lower performance on language, attention and memory tests and adverse effects in vision and motor functions. Two Wisconsin studies have found elevated mercury levels in approximately 6% of women of childbearing age.

Statistically valid estimates of the number of pregnant women and women of childbearing age in Wisconsin and the proportion of this sub-population that have elevated mercury levels are not available. The studies cited cannot be used to develop sub-population risk estimates for the entire state because the main study itself was based on self-selected study participants, i.e., the study did not use representative sampling methods, which must be used in order to draw meaningful statistical

² EPRI Issue Brief 1016246, *Current Scientific Evidence on the Relationship between Methylmercury Exposure and Cardiovascular Diseases*, 2007.

³ Hibbeln et al., *Maternal Seafood Consumption in Pregnancy and Neurodevelopmental Outcomes in Childhood (ALSPAC study): An Observational Cohort Study*, *Lancet* 369 2007, p. 578-585.

inferences about a population. At best, the data provide valid information for the individuals who volunteered for the study.

More importantly, the amount of methylmercury present in the blood or hair has been mischaracterized as being indicative of adverse risk. In fact, the exposure measure, 1 ppm in hair, represents an extremely conservative estimate of risk. It is based on a USEPA review of certain epidemiological studies conducted in a North Atlantic island population that consumed highly contaminated marine mammals (pilot whale that contained 10-60 ppm PCBs in blubber along with many other organic pollutants in addition to methyl and inorganic mercury). The “no effect” level from this study equated to 11 ppm in hair. This number was then divided by 10 to yield the so-called RfD risk factor for methylmercury⁴.

7. A 2004 survey of hair mercury concentrations in Wisconsin residents showed that 29% of men and 13% of women had mercury levels above the Wisconsin and National guideline value of 1 ppm. The United States Environmental Protection Agency has determined that hair mercury concentrations in excess of 1 ppm are a level of concern for adverse effects.

Again, the results of this survey, as they relate to women, may not be representative of the general population of Wisconsin. At best, the survey results can only be used to describe the characteristics of those individuals who learned of the study and participated in it.

In addition, the extremely conservative 1 ppm level cited was not intended for the U.S. population at large, but the segment of the population believed to be the most sensitive to methylmercury ingestion namely, pregnant women and women of child bearing age.⁵

10. Fish eating birds and mammals in Wisconsin are at risk of adverse health effects from mercury contamination and laboratory studies demonstrate that mercury levels typically found in the environment can cause negative impacts on fish reproductive success.

The portion of this statement regarding risks posed by mercury to fish eating birds and mammals is only partially accurate. Regarding risks to loons, the most highly exposed animal in Wisconsin, research conducted, to date, by Dr. Meyer shows that it is not clear which of two stressors, methylmercury exposure or lakeshore development, is having a more undesirable impact on loon populations. It is important to recall previous presentations before the NRB made by Dr. Meyer⁶ wherein he clearly pointed out that elevated risks posed by mercury were more likely for loons nesting in small, unproductive / acidic waters, such as natural bog lakes. Loons from other lakes were not highly exposed. Most importantly, Wisconsin’s loon population appears stable in spite of the above-mentioned stresses.

Regarding mercury impacts on fish populations, the most highly contaminated species present in state waters appears to be walleye based on WDNR’s fish contaminant data base. It is very important to note that multi-year research efforts by state fishery biologists have attempted to understand the controlling mechanisms of and explanations for the well documented year to year fluctuations in walleye populations present in many northern Wisconsin lakes. None of the most important “controlling factors” include methylmercury exposure levels.

⁴ See executive summary discussion, National Research Council, *Toxicological Effects of Methylmercury*, 2000

⁵ Ibid.

⁶ May 26, 2004 briefing before the Natural Resources Board.

11. Wisconsin based studies have found that reduced atmospheric mercury deposition results in lower levels of fish contamination in sensitive lakes. Fish mercury levels in Little Rock Lake, Vilas County, decreased by 30% between 1994 and 2000, coinciding with a similar decrease in atmospheric mercury loading over the same time period. The authors attributed the change in mercury loading to decreased emissions of mercury from commercial and industrial sources in the region.

While it is true that mercury deposition in the vicinity of Little Rock Lake did decline by 30% during this time frame, sulfate deposition also declined by 45% during the same time frame. As was discussed by Dr. Krabbenhoft during his briefing before the NRB last July, it is possible that declines in sulfate may be a very important co-factor for certain water bodies as it relates to impacts on the methylation process (sulfate stimulates methylation in certain types of water bodies). Similar findings have been noted for lakes on Isle Royale.⁷ However, in this case, declines in sulfate deposition occurred without any measured declines in mercury deposition over a 15-year period. None-the-less, fish mercury levels declined substantially. In fact, among the top predator fish, the mercury levels have declined from levels sometimes in excess of 1.0 ppm to levels below USEPA's fish tissue criterion of 0.3 ppm..

With respect to the source(s) of mercury present in the atmosphere over Little Rock Lake, no studies, aside from those conducted by Atmospheric & Environmental Research, Inc. (AER) and USEPA, have been conducted that attempt to link local / regional sources of mercury to mercury deposition in this area. As we have commented previously, the AER studies found that sources in Wisconsin had little influence over mercury deposition occurring in northern Wisconsin.

14. Studies where isotopes of mercury have been added to research plots to track where mercury ends up, have generally found that mercury and methylmercury concentrations in sediments, water, plant and animal life were all linearly related to this added mercury deposition. This suggests that increases (and decreases) in mercury will affect concentrations in sediments, water, plant, and animal life as well.

In general, we agree with these findings⁸ but note that this statement lacks an important qualifier. It is important to understand that a linear relationship does not mean a proportional response. In other words, while mercury isotopes were added at rates that were five-fold higher than ambient mercury deposition occurring in this region of Canada, the concentration of methylmercury found in water, plants, and animals did not increase five-fold. For example, after three years, mercury levels in zooplankton increased 30% not 500%. This reinforces what has been known for years; that only a small fraction of oxidized mercury that deposits on lake surfaces is ultimately converted to methylmercury within the lake.

15. Since several studies in the U.S., Canada, and Europe have shown that local and regional reductions in mercury emissions led to lower rates of atmospheric mercury deposition and lower concentrations of mercury in air, rain, water, and fish, it is reasonable to conclude that reducing mercury sources in Wisconsin will have positive effects on the environment and public health.

This conclusion is not supported by any of the referenced studies and is in fact in conflict with an established body of relevant science. There is no demonstration or credible evidence that the proposed

⁷ Drevnick et al., *Deposition and Cycling of Sulfur Controls Mercury Accumulation in Isle Royale Fish*, Environ. Sci. Technol, 41 (21) 2007, p. 7266-7272.

⁸ Harris et al., *Whole-ecosystem Study Shows Rapid Fish-Mercury Response to Changes in Mercury Deposition*, National Academy of Sciences, 2007.

state-only utility mercury rule will reduce health risks to Wisconsin citizens nor measurably reduce mercury in Wisconsin's environment.

Section one of these comments provides a detailed critique of the Finding's deficient coverage of this pivotal environmental policy issue. It provides references to studies that have analyzed the fate of mercury emissions from coal fired power plants. The results of those studies provide reasonable insight into the lack of measurable environmental benefit that will result from the proposed utility mercury rule.

16. The State of Michigan estimates that about half of the mercury emitted from coal-fired power plants is readily deposited and a recent study has identified atmospheric reactions enhancing the tendency for local and regional deposition.

This is an incorrect description of the cited references for work in Michigan. The MDEQ has never provided any measurement data for Michigan's coal-fired boilers that substantiate this 50% figure. The MDEQ used assumed values, not measured values for flue gas mercury speciation in source emissions. These flawed assumptions greatly influence the results of the estimates of local deposition. Incorrect inputs about the relevant chemistry of utility mercury emissions make these mercury deposition estimates invalid.

In addition, if the additional referenced "recent study" is the so-called Steubenville study, then this conclusion is unsupported as well. A study that was conducted in Steubenville, Ohio⁹ concluded that local / regional mercury emissions from power plants were responsible for more than 50% of the deposition in this area. However, the term "local / regional" has been greatly misunderstood. This term may be interpreted to include emissions from power plants that are up to 500 km (300 miles) from Steubenville. By contrast, other peer reviewed studies¹⁰ typically point to local contributions of about 10% based on simplified plume chemistry used in local source models such as AERMOD.

⁹ Keeler et al., *Sources of Mercury Wet Deposition in Eastern OH, USA*, Environ. Sci. Technol.40 (19) 2006, p. 5874-5881.

¹⁰ Seigneur et al., *Modeling Atmospheric Mercury Deposition in the Vicinity of Power Plants*, J. Air & Waste Manage. Assoc. 46 2006, p. 743-751.

This concludes the comments on behalf of We Energies. Please contact Kathleen Standen, Manager – Environmental Regulatory at (608) 283-3009 if you have any questions regarding our comments.

Sincerely,

A handwritten signature in black ink that reads "Kristine M. Krause". The signature is written in a cursive, flowing style.

Kristine M. Krause, P.E.
Vice President - Environmental

cc: Matt Frank, DNR, Secretary
Pat Henderson, DNR, Deputy Secretary
Al Shea, DNR, Administrator, Division of Air and Waste Management
Natural Resource Board members
Commissioner Dan Ebert, PSCW, chair, w/o attachments
Commissioner Mark Meyer, PSCW, w/o attachments
Commissioner Lauren Azar, PSCW, w/o attachments
Eric Callisto, PSCW, Executive Assistant to the Chair
Representative Phil Montgomery, w/o attachments
Senator Jeff Plale, w/o attachments

Attachments