

**Stigma, Fear and Forgiveness: Perspectives on Environmental Legacy and Community Closure  
Following Remediation Projects – 14487**

Robert Zelmer \*, Liliana Benitez \*\*, Brian Geddes \*\*\*, Heather Kleb \*\*\*\*, Ammar Talic\*\*\*\*\*

\* Environmental Legacy Associates

\*\* University of Victoria

\*\*\* AMEC Environment & Infrastructure

\*\*\*\* Canadian Nuclear Association

\*\*\*\*\* Psykolog Consulting

**ABSTRACT**

Stigma, fear and forgiveness are “*elephants in the room*” through the life cycle of remediation projects associated with radioactively contaminated sites and many with other sites impacted by the activities of man in the environment. Full closure on community and societal issues associated with such projects must consider and accommodate these “*three elephants*”. Full closure with all participants is illusive and often unattainable in current practice, eroding the image of success for outcomes achieved with high effort and expense.

Much of the energy spent in projects, perhaps by necessity, is consumed on other matters. Energy is focused on determining the responsibility and commitments to undertake the remediation. It is spent on the burdens of funding and advancing the remedial engineering and residuals management.

Communicating progress and maintaining a factual understanding on the overall initiative competes with the needs to manage underlying concerns and expectations of all the players engaged in the sites and the delivery. How much really, is left for addressing the “*three elephants*”? What is an appropriate level of resource allocation to these needs? Do we even know how? Is it really true that “*a job well engineered, delivered on-time and on-budget*” will meet the expected standard of success for all?

This paper will look at the “*three elephants*” and at the consideration of expectations outside the project delivery team. It seeks to raise questions and hopes to offer lessons learned from relevant project examples. The paper provides the reflections of authors who are seasoned professional practitioners in the environmental remediation field. The work that underpins the reflections of the authors has been conducted over decades leading to solid and varied observations and suggestions. Attention paid to “*the three elephants*” is seen as essential to achieving real success in major project activities. Such success is expected to be lasting and to be affirmed with passage of time.

**INTRODUCTION**

“*Stigma*”, “*fear*” and “*forgiveness*” are “*Elephants-in - the - Room*” through the life cycle of remediation projects associated with radioactively contaminated sites, and many with other sites, impacted by the activities of man in the environment. Full closure on community and societal issues associated with such projects must consider and accommodate these “*Three Elephants*”. Full closure with all participants and impacted parties is illusive and sometimes perhaps unattainable in current practice, eroding the image of success for outcomes achieved with high effort and expense.

This paper draws on the past experience of the co-authors and includes attributed quotations provided by additional “*acknowledged contributors*”. It contains a mix of views. Care has been taken to avoid current status reporting on projects or policies delivered or in development by others. By discussing reflections

rather than status, the writing team hopes to provide grounded input to the theme of the paper while raising the profile and the consideration of the “*Three Elephants*” that we know from past experience are often “*in the room*”. For specific and current initiative status information on any projects or policies mentioned in this paper the contributors suggest the reader consult the quoted reference or current project or program authority.

“*What is an elephant*” and “*why these three elephants*”, will be discussed in the sections below. The authors hope the use of this metaphor is interesting and helpful to the reader and to the formulation of questions for further debate.

## **ELEPHANTS**

The “*Elephant*” is the largest living land animal, of which two species survive, the larger African and the smaller Indian, both with a trunk and long tusks. An “*elephant in the room*” is an English metaphorical idiom for an obvious truth that is either being ignored or going unaddressed. The idiomatic expression also applies to an obvious problem or risk no one wants to discuss. It is based on the idea that an elephant in a room would be impossible to overlook; thus, people in the room who pretend the elephant is not there have chosen to avoid dealing with the looming big issue.

For the purposes of this paper, this idiomatic expression is useful in bringing to life the discussion of stigma, fear and forgiveness – our three elephants of interest. No doubt we can consider their size, nature, behaviors and the tell-tale indicators of their presence on the scene. We can imagine elephants in the wild, at the circus and in our meetings; also elephants peacefully at ease, or on the rampage. And we can ask whether or when we should attempt to deal with any elephants in our initiatives. What is the impact of tolerating an elephant or two in close quarters? Let us consider these aspects as we travel the paragraphs of this paper. Our hope is to discover how to manage our elephants and to identify specific topics that need our closer attention.

In considering any elephant, there are six key questions one should consider, namely, the following:

- Q1. What are the characteristics of this elephant?
- Q2. Why is this one of the elephants in the Room?
- Q3. What does co-existence with this elephant requires?
- Q4. What could be the consequences of this elephant?
- Q5. What is the best approach, for each stakeholder impacted by this elephant?
- Q6. To attain a sense of closure, following the conclusion of a project, what needs to be accomplished, recognizing the significance of this elephant?

## **STIGMA**

Let us now consider the first elephant. When we think of the term “*stigma*” or “*stigmatized*” in environmental impacts or remediation activities, we think of some label or impression associated with the local environmental situation that becomes attached to local land, waters, attitudes and/or people. Consequences associated with stigma are negative and can be economic or social. Stigma may have psychological or health consequences for labeled people. Stigma can be defined as “*...a mark of disgrace associated with a particular circumstance, quality, or person*”.

“*Stigma*” is one of our three elephants because it is often mentioned outside the room, occasionally mentioned inside the room, and lingers in the local and distant public domain seemingly indefinitely.

Once you are considered to “*glow in the dark*” it seems you continue to “*glow in the dark*”. Is this humour or is this more?

Stigma is raised as a basis for financial compensation or other considerations in some projects. Stigma is blamed for economic ills and worse. Its existence is often claimed and attempts to measure and quantify its impacts are sometimes made. There are several very important questions regarding stigma depending on the project or initiative. Is it real? Is it as significant as claimed? What can be done effectively to reduce or eliminate this stigma?

Ouzounian [1] states: “*My thoughts on these elephants follow. Stigma is a factor in many very different types of projects – from domestic waste dumping to wind farms. For example I remember the wind farms and the waste sorting center projects at the time I was head of the Environment and Energy Agency for the Paris Region.*

*It seems that any change in our environment provides a reason for some to protest. But I feel it is often not fear of the new project, but rather fear of change itself. We feel secure with what we have, but insecure with what may happen.*

*In the case of environmental remediation, the case is somewhat different in that there is a high expectation of a better environment. And it is because of the expected improvement after decades of discussion that forgiveness may happen.*

*We can also consider the case of radioactive waste from nuclear power plants. Stigma is mostly against “Nuclear”, and fears related to “radioactivity”. However, because radioactive wastes from nuclear power plants are the result of the legacy of past decisions, and because there is a strong willingness to “eliminate” the materials giving rise to these fears, then there is a rather great acceptance (at least at national levels) and the related forgiveness seems to be felt. Forgiveness is also possible because there is an important principle which is “polluter-pay” (I personally prefer “producer-pay” because there is no pollution but a great willingness to manage radioactive waste in a very safe and clean way). “*

## **FEAR**

Fear is our second elephant. We all have known fear. Fear has been defined as: a distressing emotion aroused by impending danger, evil, pain, etc., whether the threat is real or imagined; the feeling or condition of being afraid. Some synonyms are: foreboding, apprehension, consternation, dismay, dread, terror, fright, panic, horror, trepidation, and qualm. Some antonyms: courage, security, calm.

When we think of the term “*fear*” in environmental impacts or remediation activities, we often think of risk, change or consequences through health impacts, environmental damage, and economic downturn. Loss of the status quo and irreversible loss of environmental assets and quality also come to mind. This may relate to community loss or personal loss or both. Perhaps there is even guilt related to failure to protect the environment for future generations.

Fear can be a motivator, a call to action, to defend and to attack. Anger and a sense of injury seem to fuel the attack mode. An urge to “*set things right*”, “*to bring about justice and fairness*” may also be involved in calls to action.

“*Fear*” is one of our three elephants because it underlies so much. Fear is such a motivator, and it is frequently “in the room” just beyond the points identified and placed on the negotiation table. Fear is not always declared by parties in a negotiation. Therefore there may be high risk in not drawing out the dimensions of fear behind environmental concerns. This elephant may not get the degree of attention it

deserves.

Chambers [2] observes that *“It is essential to have some discussion of fear of harm. Whether the harm is potentially material or simply perceived as such, discussion. Public and regulatory decisions can often be based on perception (fear) of harm. In the north, the Deline Dene people had (and I think have) a fear that the work of transporting concentrate from Port Radium has affected them. There is (my view) a general fear that development will affect traditional ways (hunting fishing etc). Some of the historic experience with wastes can give credence to such concerns.”*

Wiatzka [3] provides ... *“some quick thoughts on stigma, fear and forgiveness. There is often a breadth of difference in understanding of real and perceived risk. The question of “whose risk is it?” also confuses perspectives (yours, mine, theirs). There is a need for balance between what can be done vs what is desired (desired by whom?) and societal tradeoffs.”*

Price [4] states: *“I think that the fear issue is a very important interest of parties around the table. Fear is a big motivator. Forgiveness is an important component in many endeavors but it cannot be taken for granted that folks will forgive. I heard Judge Murray Sinclair, the Chief Commissioner of the Truth and Reconciliation Commission (re. residential schools) speak about this and he said that he accepts the fact that some folks are not ready to forgive. Desmond Tutu has written about the situation in South Africa and the importance of forgiveness there, in his book titled “No Future Without Forgiveness”. Another source is the book by Stephanie Irlbacker-Fox “Finding Dahshaa: Self-Government, Social suffering and Aboriginal Policy in Canada”. Note the chapter in this book about a Northwest Territories uranium mine.”*

## **FORGIVENESS**

Forgiveness is the third elephant. What is forgiveness? Who has erred? Who is injured? Who is to forgive? Who is to be forgiven? Where do healing and closure fit in? Where does “righting a wrong” fit in to “injury or transgression” and “forgiveness”?

Forgiveness can be described as the renunciation or cessation of indignation or anger as a result of a perceived offense, disagreement, or mistake, or ceasing to demand punishment or restitution. When we forgive, it can be said we *“grant free pardon and give up all claim on account of an offence or debt”*. The concept and benefits of forgiveness have been explored in religious thought, the social sciences and medicine. Forgiveness may be considered simply in terms of the person who forgives including forgiving themselves, in terms of the person forgiven or in terms of the relationship between the forgiver and the person forgiven.

In most contexts, forgiveness is granted without any expectation of restorative justice, and without any response on the part of the offender (for example, one may forgive a person who is incommunicado or dead). In practical terms, it may be necessary for the offender to offer some form of acknowledgment, an apology, or even just ask for forgiveness, in order for the wronged person to believe himself able to forgive.

Hausmann [5] advises that ... *“I am not as sure where “forgiveness” comes into play. The roles of stigma and fear are much more obvious. An observation I have made over the years, is that often (perhaps even usually), the outcomes and aftermath of a significant engineering project, be it landfill or toxic waste sites, nuclear power plants, transmission or pipelines, etc., are far less deleterious than the specter raised by fear mongers and ignorance. On the other hand, there are occasions when the outcome indeed matches the foretelling or even worse (e.g. Fukushima in Japan, Love Canal in the USA, and indeed wind turbines in Canada).*

*How to address this? Inter alia, greater effort must be paid to two things: 1) – monitoring and reporting the performance of, and neighbor satisfaction levels with, facilities after they are built and in operation, so a clear record over decades is established for all to see, and 2) - being far more transparent than heretofore about what went wrong and why, when it does.*

*In the case of wind turbines in Ontario, we see a case of rushing to development by a higher level of government (provincial) perhaps without sufficient inclusion of lower levels of authority (municipal) or sufficient research and integration of international experience.*

*The objective in approaching fear and stigma, of course, is to provide the public and the potentially impacted parties with a greater awareness of the effects of such facilities and undertakings rather than leaving it to the naysayers, who will always be with us. The corollary objective is to create planning protocols with long horizons that are inclusive and broad enough that they cannot be circumvented by short-term objectives. If achieved, greater public awareness and better planning protocols, could serve to reduce both stigma and fear.”*

In the case of a major environmental remediation, the original polluter or contributor to environmental impacts may be long gone or otherwise not participating in the solution. Sometime, especially more recently, they are in fact involved. Government or government led initiatives seek to do large scale cleanups. When we think of the term “*forgiveness*” in these activities, we think of the following questions.

If A is the remediator and B is the host or impacted community, then:

1. Does A injure B, or does B disable A?
2. Does A injure B, or does B injure A?
3. Should B forgive A, or should A forgive B?
4. Should A and B forgive each other, and forgive themselves?

“*Forgiveness*” is one of our three elephants because it is ultimately connected to the long term perception of success of the environmental remediation. It is for current and future generations. Yet it can be lost in the focus on activities necessary and immediate to advancing the implementation steps of remedial work. It is closure and completion, but is achieved “*further down the road*”. So, it is an elephant in the room. An act of forgiveness can be ceremonial and mark the end of the engineering implementation of major remedial work. It is a process feature imbedded in First nations' culture.

The Déline Dene people of the Great Bear Lake area in Canada's Northwest Territories have been dealing with the issue of former mining and ore hauls long ago from Canada's first radium and uranium mine. The remediation of the mine site at Port Radium and associated planning and impact discussions with the local people bring forward a body of knowledge on community healing that speaks to our discussion here about the three elephants. The final report of the Canada-Déline Uranium Table (CDUT) is filled with insights and issues [6]. It includes 26 recommendations for going forward. Furthermore, there is documentation of psychological assessments, grief workshops, healing journeys, stress and anxiety workshops, as well as human health and ecological risk assessments. The human health studies report that fear and anxiety about health and environmental impacts have severely affected the community; that oral histories revealed problems continue to be associated with perceived environmental threats; and, that people's sense of harmony with nature, which is a crucial component of their cultural identity, has been affected. The report, in its appendices, includes 77 key questions and answers related to these activities. Forgiveness here has many dimensions. Apologies have been demanded from the Government of Canada by the Dene people associated with the mining operation and the use of its uranium product. A visit by

the Dene people to the people of Japan sought understanding and closure to assist healing. A video and hard cover report [7], aptly named “Moving Forward Together”, capture the emotion and the challenge.

Wiatzka [8] observes ... *“Forgiveness, is one of the tricky topics as it involves who did what, who is being forgiven, and who is forgiving. The elements at play may include societal, cultural, religious, aspects as well local regional and state politics.”*

Lickers [9] comments on community closure as follows. *“One significant case immediately comes to mind. In 2005-2007, I was legal counsel to one of the parties with standing before the Ipperwash Inquiry. The Inquiry resulted from the wrongful death of Dudley George. He was 38 years old. His ancestors were from the Stoney Point Reserve in southern Ontario.*

*He and other men, women and children occupied Ipperwash Provincial Park on Labour Day, September 4, 1995 to protest the federal government's refusal to return the Stoney Point Reserve. The federal government had appropriated this reserve as a military training site in 1942 under the War Measures Act and had promised to return it after WWII. The reserve had not been returned five decades later. During a confrontation between Ontario Provincial Police and those in the park, Dudley was shot by police and died. An inquiry was finally convened in 2005 and Justice Sidney Linden presided over it.*

*His final report and recommendations were published in 2007. Since then, the park has been in an environmental clean-up because of its use as a military training base (unused ammunition, contamination etc). The Final Report documents the history of this land claim and the tragedy that ensued. The people of Kettle and Stoney Point are still waiting for community closure, now 18 years later.”*

## **LEGACY**

This paper is examining environmental legacy or the Legacy from the point of view of the success of the outcome of the community supported remediation work – a project focus. It is clear that further probing into this subject will need to take into account the concepts of “*Environmental Justice (EJ)*” as has attracted attention around the world over more than the past twenty years. This paper examines the elephants in the room, the building blocks of legacy, and presents a formula for success.

The term environmental justice, as reported on the internet, emerged as a concept in the United States in the early 1980s. The term has two distinct uses. The first and more common usage describes a social movement in the United States whose focus is on the fair distribution of environmental benefits and burdens. Second, it is an interdisciplinary body of social science literature that includes (but is not limited to) theories of the environment, theories of justice, environmental law and governance, environmental policy and planning, development, sustainability, and political ecology. While the predominant agenda of the Environmental Justice movement in the United States has been tackling issues of race, inequality, and the environment, environmental justice campaigns around the world have developed and shifted in focus. For example, the EJ movement in the United Kingdom is quite different. It focuses on issues of poverty and the environment, but also tackles issues of health inequalities and social exclusion.

Building the Legacy is the soft side of Environmental Remediation (ER) in contrast to the “*hard side*” which is the engineering delivery, the “*muck-and-truck*”, and the ongoing environmental safety and control measures. One of the key determinants is how prepared a community is to move on is the end use, or project legacy that remains following site remediation. If successful, the Legacy is an honorable one. When the legacy is viewed as an honorable one, communities seem better able to move past the stigma, fear and on to forgiveness or even forgetfulness as they cease to think about the contamination that once occupied these sites. Some post project public attitude or polling data, should such be gathered, may show that people are eventually able to move on to a point where they give little thought to the past

contamination. The following are some examples of how Canadian and American communities have moved on to what they view as an honorable legacy [10].

Remediation projects currently being undertaken in Ontario, under the Port Hope Area Initiative, are being carried out with a view to improving the environmental legacy for future generations. In the Municipalities of Port Hope and Clarington residents have expressed the desire to clean up and manage historic low-level radioactive waste in a manner that will leave behind an *“honorable legacy for future generations.”* Community members have suggested that this could be achieved through the development of an end use for the resulting waste management facility that would include an information or educational centre, to inform visitors about the historic waste, but also to demonstrate the safe management of the material. In their view, the capacity of the waste management facility to support a recreational end use would also demonstrate the safety of the facility.

In Fort McMurray, Alberta, a barge to rail transfer point on the transportation route between a uranium mine site in the Northwest Territories and a refinery in Port Hope, Ontario exhibited elevated levels of radioactivity. The radioactivity was suspected to be the result of past spillage of uranium ores and concentrates during transport to the refinery in Port Hope. The property owner, who was interested in selling the property, entered into an agreement to accelerate the cleanup of the site. The site remediation was initiated in 1993 and completed in 1994, with the transport of approximately eight cubic metres of licensable waste material to a storage facility at Chalk River, Ontario, and the transport of 16,000 cubic metres to a specialized cell at the local landfill. Other waste materials that did not exceed the cleanup criteria, but which may have contained some rocks with elevated levels of contaminants, were left on site. The property is now the site of a large retail facility and parking lot.

In Chicago, Illinois, thorium contamination from a West Chicago thorium processing facility was identified at Reed Keppler Park in 1977. In 1990, the United States Environmental Protection Agency designated the site a Superfund site along with three other sites in the local community. Despite this designation, the City of Chicago was intent on constructing a new swimming pool on the site. Site development was not to inhibit the future cleanup of the site and construction activities were to be restricted to areas identified as clean. During the cleanup, an additional contaminated site was identified under the sidewalk of the old pool. It was covered by a soil barrier to avoid interfering with the future cleanup of the Park's grounds. The Prairie Oaks Aquatic Centre opened in 1995.

In the 1990s a golf course was proposed at the former site of a uranium / vanadium mill in Monticello, Utah. Vanadium and later uranium ore processing activities were undertaken at the Monticello mill site between 1942 and 1960. When the mill was dismantled in 1964, thousands of cubic metres of tailings were left behind, leaving traces of uranium at the mill site and throughout the town. In the late 1990's, the United States Department of Energy removed approximately 1.9 million cubic metres of tailings and contaminated materials from the site and placed them in a repository a couple of kilometres away. In the end, the golf course was not constructed on the mill site, but was restricted to the site of an existing 9-hole golf course on the other side of the highway, to avoid the potential interference of the highway. However, the restored mill site contributes to the green space that surrounds the 18-hole Hideout Golf Club.

In 1983, the United States Environmental Protection Agency (US EPA) added the former site of a radium refinery in Denver, Colorado to the list of hazardous waste sites requiring cleanup. The site was not only the site of a radium processing plant, but was exposed to various other industrial activities including brick manufacturing. As a result of these activities, the site was contaminated with radioactive materials, heavy metals (mainly zinc and lead) and arsenic. The US EPA excavated approximately 97,000 tonnes of radioactive materials from the site and transported it to a licensed disposal facility. The remaining 12,615 cubic metres of metals contaminated soil were consolidated in four cells and covered with an asphalt

cover to limit access. The consolidation site is now the site of a Home Depot parking lot, in an area where the materials are least likely to be disturbed.

### **Pairings of Elephants and Building Blocks**

We suggest that for each of the elephants (obvious truths being ignored) a pairing can be made with a building block to Legacy. The three Elephants and their “pairing” with the Building Blocks of Legacy are discussed below.

We propose that the pairings of elephant to building block are: 1) Stigma, the first elephant, with Healing (Understanding); 2) Fear, the second elephant, with Risk (Acceptance); and 3) Forgiveness, the third elephant, with Closure (Completion).

The “*formula for success*” involving the three elephants and the associated building blocks of legacy is presented later in the section on “Success” below.

Consider first, Stigma and Healing (Understanding). Stigma links to impact, blame, misinformation, and responsibility; whereas, Healing links to understanding, involvement and engagement.

Then consider Fear & Risk (Acceptance). Fear links to perception, knowledge or ignorance, memory, misinformation, urgency; whereas, Risk acceptance links to investigation, information, honesty, disclosure, acceptance, involvement, and experience/track record.

Finally, consider Forgiveness & Closure (Completion). Forgiveness links to righting the wrong, responsibility, relationships, involvement, progress, track record, and honesty, whereas, closure links to completion, track record, evidence, and trust.

Talic [11] advises: “*There are several ways for psychologists to approach and contribute to the subject of this paper. Using clinical psychology and theories of psychological distress and coping styles can be used to understand ‘the fear elephant’.* The fight or flight response involves fear as a fundamental physiological signal to an external threat. Cognitive psychology on the other hand can map cognitive biases that arise with different types of risk perceptions. Identifying biases can help us challenge (ir)rationality of observed cognitions and emotions within a group. Professionals involved need effective techniques of communicating these. I would suggest that environmental stress and anxiety grounded in fear of deteriorating health requires evidence-based interventions as practiced among cognitive-behavioral therapists. Using applied behavioral analysis and determining causal relations between environmental antecedents/triggers, behaviors and consequences, is an important tool in behavioral change management. If ‘the forgiveness elephant’ is a desirable and necessary process for a community closure, then these causalities are to be addressed by those involved in the remediation.”

*Social psychology can contribute with e.g. theories of attribution of blame and responsibility. Who is responsible for the problem and who is responsible for the solution are controversies that can be addressed by social psychologists from various angles. Furthermore, conflict resolution skills are of significant value in the process of closure. Scientific approach would imply reliable measures of key constructs, in this case we provide the metaphor of the three elephants. Research suggests that higher fear and perceptions of health risk when exposed to hazardous waste, is related to a lack of trust of remediation workers [12]. These and other tools used by psychologists are thereby necessary in order to develop environmental policies that are responsive to the needs of all of the stakeholders involved.”*



## **“SUCCESS”**

Attention paid to “*the three elephants*” is seen as essential to achieving real success in major project activities. Such success is expected to be lasting and to be affirmed with passage of time. Full closure on community and societal issues associated with such projects must consider and accommodate these “three elephants”. Full closure with all participants is illusive and often unattainable in current practice, eroding the image of success for outcomes achieved with high effort and expense.

Success is the achievement of an honourable legacy. The proof of an honourable legacy, of course, is only seen well beyond the planning and implementation stage of the initiative.

The formula for success is this- Recognize, Plan, Build:

1. Recognize and understand the Elephants; then
2. Plan and form strong Building Blocks; which
3. Work together to Build an Honourable Legacy.

To complete “*the Safari to Success*” we must ride the elephants along the way together. The Legacy we leave to future generations is determined (i.e. has its outcome/quality) by how well we ride or manage the elephants. What remains in the end is both the perceived and actual value of and confidence in the environmental measures implemented.

Talic [13] provides a perspective from the field of applied psychology. “*How to pay attention to the three elephants efficiently? Let me share the premisses behind one type of intervention that can be used when working with ‘the elephants’ and closure on both individual and group level. Methods are evidence-based and grounded in modern cognitive-behavioral theories of mindfulness and acceptance. The **Stop-Observe-Accept-Let go (SOAL)** model, originally abbreviated by Andries Kroese as a part of attention training, will help us illustrate the steps of the process.*

**Stop!** - What is going on? This step is about fully contacting present moment as conscious human being. One way to stop in the moment is by focusing on the external reality, on the context and the circumstances that are given. What is there in the room? Another type of reality to which attention can be directed to, is internal reality. It can be reached by focusing on something as taken for granted as breathing. So take a few deep breaths. Inhale, exhale and watch out - an elephant may come your way.

**Observe!** - Second step is to register, notice and sense both internal and external realities. It means to validate reality for what is, as perceived by senses, without judging or evaluating. It is about being a neutral observer, rather than a victim of the situation. It is a kind of normalization done by validating normality and variety of stressful responses. With two or more sides involved, this process requires active listening while creating an allowing space for people to express their stories. What do injured parties need in order to achieve some measure of closure? What kind of acknowledgement is necessary from sides involved for the process to move on in a desired direction? What is a desired direction? This can be very individual and can change over time. Let’s say a community has been exposed to a radiological site. External threat is identified, though the nature and level of risk are unclear. Fear and uncertainty may arise. Even frustration and unwillingness to cope with something so unanticipated. Integrity has been invaded and home is no longer a safe haven. Ruminations about health are triggered and reinforced by agonizing fear that body is infected. Negative cognitions about oneself and one’s in-group/community can be observed once the news are spread. Being stigmatized as potentially unhealthy and one’s community

*declared unsafe is a shocking information to process. What about registering these cognitions as they come without judging or evaluating them but rather just noticing the unwanted perceptions that are out of one's control, just as heavy and stigmatizing as they are? What happens? Research validates that "toxic exposure incidents are stressful, forcing victims to adopt some form of coping response; [and] contamination is inherently stigmatizing and arouses anticipatory fears [14]". These times are shown to produce group cohesion and in-group identity is strengthened. Paying attention mindfully and recognizing elements of restorative power within a group e.g. resources that a group demonstrates when taking care of each other are all behaviors worth observing and to be reinforced by helping professionals during the process.*

**Accept!** - means willingness to have and be with a discomfort caused by external threat. It does not imply liking or favoring the condition as such. Neither does it mean giving up, but rather being open about what is present within a community or oneself, even when at one's momentary expense, e.g. an unwanted consequence that triggers an unpleasant state of mind. This kind of acceptance means creating a capacity for all kinds of discomfort that may arise. What is feared? How does it feel? Where is the fear? What is lost? What is needed? No matter how realistic a fear in proportion to the level of threat, acceptance as such implies willingness to acknowledge states of frustration, outrage, anger, sorrow, uncertainty, depression, loss of control/security and all other types of discomforts and sufferings people might experience and describe during the process. Acceptance means to stop fighting reality of the given moment in order to refocus and act in valued direction. Given the circumstances, acceptance is a way of being more efficient in making choices and decisions. It is a way of being more flexible in a difficult situation. Accepting realities this way broadens one's behavioral repertoire. Because as such, it opens for possibilities and solutions, whereas phobias and anxiety that eventually are left once stressors are gone, become handicapping hindrances that make one's world shrink. Lack of acceptance gives rise to family conflicts and can lead to serious mental distress. Worth mentioning is that some fears are very realistic. It has been stated by some that fear of cancer can be a rational response when living near a hazardous waste landfill [15]. Acceptance therefore means facing reality for what it is without denial or need to avoid discomfort when present. It is acknowledging the elephant in the room. It is a prerequisite for being able to reconcile, make closure or simply let go.

**Let go!** - means therapeutic closure and is a final phase of acceptance. In order to let go and heal, sometimes, we need to forgive. Some measure of remorse from the other side can make this process easier. Experience with victims of human-induced disasters suggests that effective closure implies both the ability to remorse and to forgive. That might not be the case when the out-group is dehumanized, because genuine remorse humanizes perpetrators and transforms their wrongdoing from the unforgivable into something that can be forgiven, the so called "paradox of remorse" [16]. Acknowledging an error and a wrongdoing and acknowledging consequences of loss and distress is a good way to activate the process. How much remorse ought there to be in the remediation process and how to communicate it in that case? Could injured parties be asked what kind of compensation or remorse is needed, and whether there is willingness to accept apology and forgive, in order to let go? If yes, how should these be

*articulated? If not, should one accept that one cannot accept nor forgive at the moment? Not being able to forgive or accept is an acceptance too. An ongoing dialogue is, however, necessary. It is first when we have accepted our realities (even if it implies that we cannot forgive), that we can let go off burdening emotions toward offender. Sense of coherence and safety can be reestablished. If there is decreased motivation to retaliate or maintain estrangement from an offender despite their actions, than we can conclude that an internal change of forgiveness has occurred [17]. An internal change as such occurs with the injured parties' full recognition that they deserved better treatment. This does not necessarily imply external consequences but it should lead to less guilt on the other side. This type of relational management requires empathetic abilities and compassion as an inevitable ingredient for a success. Mentalizing exercises and perspective-taking addressed through eye contact in a compassionate inter-group dialogue should have a healing impact according to research. Forgiveness interventions demonstrate several positive outcomes. They improve, inter alia, physical well being and lead to a greater sense of personal control. In some other cases, forgiveness interventions facilitate the restoration of relationship closeness."*

It has been reported that in LLRWMO projects in Canada, the key challenge to successful resolution of waste management and environmental remediation issues is defining a long-term management approach that is technically and environmentally robust and has public confidence [18]. Furthermore, the process of safe remediation has also been important. The context has always included environmental and health concerns. Usually there is a need for the parties to establish a common knowledge in order to successfully communicate and problem solve together. These remain reoccurring needs as locations, geography and cultural settings change.

In each of the communities where remediation is required, the same generic approach is applied. The steps generally include, as appropriate: initial fact finding and consultation, environmental surveys and waste delineation, interim selective removal or consolidation and finally, planning and implementation of full remediation and long-term management. Each of the steps involve consultation and joint planning with community stakeholders.

Generally the remedial approach is aimed at gaining appropriate control and putting in place appropriate management of the contaminated materials as soon as possible, reflecting the appropriate level of concern and response. Often, at very low contaminant concentrations or when contaminants are not likely to be accessed or inadvertently relocated or distributed, interim measures and identification are sufficient to meet environmental and social needs in the short term. Full remediation for the long term can be planned and optimized subsequently. Also, removal of licensable levels of contaminants, whether removed early or removed later as part of the long-term remediation strategy, is a practice that is used to advantage.

The success in the remediation of historic radioactive waste in communities across Canada has been highly dependent on building confidence with the involved communities in a deliberately incremental and carefully designed process. In all of these cases, the importance of cultivating early stakeholder involvement was key in building the necessary confidence that would result in the implementation of cleanup solutions. It is also important that partnering organizations and stakeholders have clearly understood their contributing roles and have exhibited co-operative problem solving behaviors. Building and maintaining a community's confidence requires constant commitment, significant resources, and mutual effort.

Shafer [19] advises that ... *"One fact that I am accepting for individual DOE Legacy sites even if they*

*have been remediated is that issues with a site when it was remediated do not go away. So I say that DOE's Legacy Management Program does not just inherit sites, it inherits issues as well. It is not simply the people who question whether the remediation was adequate in the first place. It will be succeeding generations who, as they learn what happened at a site, will want to know if it really is safe, if we have really told them everything. So it is not enough to gain trust or legitimacy, you have to maintain it just as much as you must maintain a treatment system, a disposal area, etc."*

Price [20] states that ... *"I think it would be wise, at the outset of projects planned, to raise the question-what if the environmental consequences are apparently too severe and the project should not be built? Too often, I believe projects are pushed forward without thinking enough about the environment."*

Wiatzka [21] adds that ... *"Leadership is key. In the absence of leadership, concerns grow and fester. In the absence of some kind of position presented by leadership, the vacuum is filled by special interests/fears. The Canada Déline Uranium Table (CDUT) was an excellent instrument and process trying to identify and address concerns in partnership and pro-actively. The problem was that it shut down after only a 5 year run, leaving most of the many good recommendations unimplemented and resulted in much frustration."*

## **LESSONS LEARNED FROM PROJECTS**

The paper now provides the reflections of authors who include seasoned professional practitioners in the environmental remediation field. The work that underpins the reflections of the authors has been conducted over decades leading to solid and varied observations and suggestions.

### **Case Studies of Non-Radiological Sites**

The influence of the *"three elephants (3Es)"* will vary with the nature of the communities involved and the relationship that these communities have with the company and/or party responsible for the issue at hand. The following case studies at two non-radioactive sites illustrate how the 3Es are influenced by community/company relationships. In one case, the responsible company was well integrated with the community and had been for many years; indeed, the community's historical roots were as a company town. In the second, the responsible company was long since removed from the community, as was the industrial sector involved and with it, the public's collective memory of its activities.

#### **Case Study #1 - Arsenic Disposal Facility, Trail, British Columbia, Canada**

Teck Cominco's Trail operations include one of the world's largest fully integrated zinc and lead smelting and refining complexes, and a hydroelectric dam and transmission system. The metallurgical operations produce refined zinc and lead, a variety of precious and specialty metals, chemicals and fertilizer products. Water quality in a local creek was impacted by seepage from landfills and waste disposal sites at the Trail operation. Teck undertook a program to improve the creek water quality by consolidating and/or containing waste disposal sites. This work included:

- Phase 1 - consolidation within a secure facility (the Duncan Dome Permanent Storage Facility) of over 100,000 m<sup>3</sup> of arsenic-containing materials from various areas on-site;
- Phase 2 - conversion of an existing disposal facility east of the Duncan Dome area into a permanent storage facility by installing a permanent secure cover; and
- Phase 3 - development of another new secure storage facility at the present location of a Scrubber Pond for accommodation of current stabilized arsenic-containing wastes.

Community reactions and concerns to note include the following. The range of impacts that Teck

Cominco's operations have had over the years in the Trail area were generally well understood in the community. While the specific details of the Duncan Dome disposal area may not have been widely known, the community was not surprised that such a site and/or issue existed in the Town. Similarly, while there have been points of tension between the company and the community over the years, Teck Cominco's interests and agenda relating to this specific site were understood and generally recognized as legitimate. The public's concerns for this project then were fairly narrowly focused on technical health, safety and environmental concerns (i.e., making sure that the technical outcomes during and after project execution were acceptable) and on the long term implications for land uses in the immediate vicinity of the site. There were few concerns about economic impacts (i.e., possible reductions in private property values), partly because of the physical separation between the site and private lands, but also because the broad community awareness of company activities and their associated impacts reduced the potential for irrational market responses to the risks posed by the remediated site.

The consultation requirements were as follows. The long standing integration of community and company in this case made for a comparatively straightforward process of engagement. A onetime open house followed by public confirmation that technical and regulatory permitting requirements had been satisfied was sufficient to secure community acceptance for the project and its outcomes.

#### Case Study #2 - Coal Tar Remediation Project, Canmore, Alberta, Canada

The site and project description follows. The former Tipple Mine site is part of a residential and recreational area in the Town of Canmore, Alberta that was previously associated with underground coal mining activity dating back to the 1880s. From the 1940s until 1979, the Tipple property was the site of a coal processing plant that was used to clean coal for sale, to manufacture briquettes and to produce coke. In 1979, the facility was decommissioned, equipment was removed or buried on-site, and the area was re-contoured. In the summer of 1998, coal tar (a by-product of the coking operation) was discovered during the installation of a sewer line. That discovery led to a series of investigations designed to assess the nature and extent of contamination on the site, and to identify appropriate strategies for management of the property.

The remediation strategy developed for the former Tipple Mine site was comprised of the following basic elements:

- construction of a subsurface barrier around the coal tar source areas designed to restrict the movement of coal tar constituents into the adjacent Bow River;
- segregation of coal tar materials encountered during barrier construction and transportation to off-site facilities for treatment and/or disposal; and
- placement of a soil cap over the entire property and establishment of a vegetative cover consistent with the site's designated use as a wildlife corridor.

The community reactions and concerns follow. Reactions in the Canmore community were similar to those in Trail in as much as there were shared concerns relating to the health, safety and environmental impacts of the proposal.

However, in Canmore, the following dynamics were also in play:

- the responsible company did not enjoy the same level of trust (at least initially) because they were not known to the community and because they no longer had a permanent presence in the Town;
- the subject site was not publicly identified as a concern until after private investments had been made in adjacent residential lands;

- the close proximity of the site to adjacent lands created significant concerns about the potential impacts of the site, and the proposed remedial plan, on local real estate values; and
- there were concerns about the potential impacts of the proposed plan on the long term integrity of the adjacent community (i.e., there were concerns that residential build out in the area would be delayed and/or compromised).

The consultation requirements included the following. Given the additional complexities of the community's concerns in Canmore over Trail, a much more intense and extended program of public engagement was required to secure the requisite support. This additional effort included:

- a series of public open houses and engagements;
- one on one interactions with local community members with mitigative responses tailored to individual concerns;
- public updates provided to the municipal council and administrative officials;
- maintenance of an interactive public project web site prior to, and during project execution; and
- one on one post construction follow-ups with concerned community members.

In summary, both the Trail, BC, and Canmore, Alberta, programs resulted in the successful rehabilitation of highly contaminated lands within urban environments. However, the public engagement effort needed to secure the social license that was a prerequisite for project execution varied dramatically between the two communities. Not surprisingly perhaps, this difference had its roots in the nature and history of the relationship between the responsible party and the community involved. The dynamics of the relationship between community and company will require careful consideration during the formulation of any strategy for addressing the 3Es in communities impacted by historical industrial activities.

### **Case Studies of Radiological Sites**

Also, with regard to case studies of radiological sites – whether at contaminated spill sites along haul routes, or contaminated sites where radioactive materials have been in use, or further at the original source mine sites, the influence of the “*three elephants (3Es)*” will vary with the nature of the communities involved and the relationship that these communities have with the company and/or party responsible for the issue at hand. The following case studies illustrate how the 3Es are influenced by the relationships and processes that are brought to bear on the area specific program. The work of the Low-Level Radioactive Waste Management Office (LLRWMO) at historic low-level waste sites across Canada demonstrates government sponsored activities. The examples at mine and industry sites driven by private sector initiatives and obligations add to the story.

#### **Case Study #3 – Historic LLR Waste Recovery and Remediations, Canada-Wide.**

It has been reported that in LLRWMO projects in Canada over the past three decades there can be found some guidance on suitable approaches for the future [22]. Observations are reported on aspects of public acceptance, design and operations, project management and environmental benefit. Though implementation of the necessary remedial work and construction of long-term management facilities will have a time frame of more than another decade, it is expected that community agreement on the solutions needed at all known remaining sites will be clear within the next 10 years.

We are advised that the record of building trust and working cooperatively with communities clearly marks the pathway to success. Social aspects and public participatory decision making processes must shape and support remedial or disposal projects. Therefore, selection of a preferred strategic approach

must be done in partnership with local stakeholders. Decisions that may have a social and environmental impact should be made in consultation with those that may be affected and any potential health effects should be explained to the affected communities. Dialogue on options and focus on a review of environmental screening documentation have been the two steps used by the LLRWMO. The roles of Task Forces, Liaison Committees and workshop engagement are part of a deliberative decision making process.

It has been reported that: the LLRWMO feels it has developed a generally successful process for interacting with communities in the development of locally acceptable remediation solutions. This “assessment and remediation process “developed over many years of evolving experience, can be described as a seven step process with some steps conducted in parallel.

The process consists of the following steps:

- **Discovery:** Legacy ores or artifacts are discovered via historical reviews and/or community inputs; field investigations are undertaken.
- **Engagement:** Initial community contacts are expanded to fact finding and decision making workshops.
- **Community Planning:** The LLRWMO and community identify alternatives for managing the impacts. Input from external agencies and contractors are often obtained.
- **Interim Management:** Interim actions to mitigate near term risks to public health and safety are taken. Monitoring, waste consolidation and some removals occur. Waste co-existence programs often play a role. This step is undertaken in parallel rather than in sequence with other steps to ensure safe co-existence with contamination in communities and to build trust.
- **Remediation:** Identification and execution of an option consistent with the community’s constraints and objectives advances.
- **Long Term Management:** A long term approach is found and implemented. This may involve waste removal or the development of a long term local management option. Validation of management system performance occurs through monitoring and operation.
- **Closure:** Outcomes are shared and celebrated with the community.

Public acceptance of projects is earned with the help of a governance scheme provided by the government on the steering and coordination of the remediation process through a governance network. This process focuses on modalities to interact between the state and the actors interested in a solution. Competent work and a local track record in the community appear to build credibility and acceptance. The assurance of an independent regulatory review also enhances acceptance. Free flowing information and staff accessible to local citizens are necessary. Providing suitable forums for dialogue is essential.

Thompson [23] observes that ...” *in the case of Port Hope, Ontario, the socioeconomic impact of the remediation project has been a significant focus throughout the planning and implementation process. Rather than concentrate solely on the efficiency of a “job well engineered, delivered on-time and on-budget”, substantial consideration has been given to the potential impact on the residents and business owners not only while the remediation is underway but in the years following. It was recognized early in the planning process that this approach could help foster closure with the community and reduce any stigma that may otherwise persist once the project is complete.*

*Without mitigating impact on the community, though Fear may well subside, resentment may continue and I doubt that "Forgiveness" would occur in this generation. So only one of the three "elephants" - Fear, will have had significant "management".*

*Port Hope has experienced more than twenty years of working toward a remediation solution that originated with its own residents but is only just now moving forward. They know about stigma, fear and frustration but the key to the progress that has been made to date is building the community's confidence with many tools of trust.*

*A key component to building and maintaining community consensus was a formal Legal Agreement. It builds confidence by making the community a partner in the process and demonstrates to the community that its interests are protected. Both parties agreed to work together and take actions to achieve the project objective with the highest level of success by developing and maintaining excellent communications throughout the process.*

*The Legal Agreement addresses all the typical essential elements of a project of this scope, i.e. time lines, cleanup criteria and project management. Several additional components address the less technical elements of the project that will have both short and long term effect on the community including a Construction Monitoring program, Property Value Protection program, end use of the storage facility site, and ongoing communications with stakeholders.*

*A critical component is the stipulation of technical and administrative support through a dedicated Peer Review team. LLRW remediation is not typical of municipal business and Port Hope has successfully utilized the Peer Review approach as part of its due diligence, allowing the Municipality to participate with regulators and provide detailed feedback.*

*The Municipality recognizes the potential for short and long term economic benefit as a result of the project. Investment in remediation activities and coordination of Municipal and private sector land development plans with remediation construction will have a positive impact on the community and longer term benefits can be realized once the remediation is complete and the key projects can move forward including waterfront development and long overdue infrastructure improvements put on hold pending remediation.*

*The Municipality's hands-on involvement with federal government agencies (the Low-Level Radioactive Waste Management Office since 1989, and the PHAI Management Office since 2008) has been critical to advancing the remediation solution. The importance of regular communications at all levels cannot be over-stated. The PHAI Management Office has proactive communication programs, but the Municipality recognizes that the community looks to local government to hear its perspective and timely, accurate dissemination of information is essential to maintaining confidence and consensus.*

*While it is the responsibility of the federal government to carry out the project, the Municipality holds the proponent accountable to the terms of the Legal Agreement and to ensure that, as is the stated intention of the federal government, the project will be carried out in a safe and timely manner, the facility will be monitored indefinitely and the project can leave an honorable legacy for future generations. “*

#### **Case Study #4 – Mines, Mills and Tailings Reclamation Projects -World-Wide.**

Sites associated with past and current operations of mines, mills and tailings management are usually very large, often old, and bring the need to manage very large quantities of material. Economic return has usually been a driver and a benefit for the involvement of stakeholders in the past.

The lessons that can be learned from environmental management initiatives at these site reinforces those lessons learned from the sites already covered. It is the large scale that heightens the challenge.



Wiatzka [24] advises ... *“Some examples of projects in this category include:*

*a) Port Radium and Rayrock mine sites in northern Canada provide examples of uranium properties that have been managed well from an engineering and scientific perspective, but where still there are lingering ongoing elements of "stigma and fear" in the community of Déline and Ray Edso and other far northern communities.*

*b) The sites along the historic ore haul Northern Transportation Route including the Sawmill Bay camp and other Northwest Territories sites in Canada pose little in the way of actual radiological risk and yet for some these sites are a continuing concern.*

*c) The major efforts associated with the area of Port Hope, Ontario, Canada provide another example - some people believe that they have been exposed, part of the population is happy to see the remediation work underway, part of the of population thinks it is a huge waste of tax payer money.*

*d) Wismut was the world's largest uranium mine decommissioning project, but it was also a transition from Russian dominance to German freedom, as such stigma, fear and forgiveness all were evident during the program. “*

The Port Radium mine site and the Wismut sites are very different but very challenging cases. We have already seen the importance and the progress at Port Radium made by the Canada-Déline Uranium Table. Huge advances have been made at Wismut sites in Germany. But it would be very interesting to consider the similarities and differences of the elephants involved at the respective sites. Wismut was a more state driven initiative. However, local communities were still impacted. For the purposes of this paper we will leave this for future consideration.

## **QUESTIONS**

This paper has looked at the *“three elephants”* and at the role their management has on the road to success. The paper has sought to raise questions hoping to offer lessons learned from relevant project examples. Some questions, though raised, have no answer yet. However it is important to identify the issues of all stakeholders. This helps us know and understand the elephants.

Some of the questions raised and answered in this paper, from our perspective include the following. Do elephants exist? What are they? When are they present in the room? How serious can they be? Do we deal with them or not, and when? Has anyone had experience with elephants? How do elephants fit into our safari to success? Are there any more elephants?

Some of the questions raised and not answered at all, or adequately, in this paper, from our perspective include the following. These questions are raised and left for future consideration. What is the best way to deal with elephants? When should we not deal with an elephant? What is the lifetime of a given elephant? Are there any elephants or elephant management techniques that are unique to domain of radioactive waste and impact management?

The views of the authors are early efforts at considering the notion of the three Elephants and are presented to stimulate further thought and discussion on these matters.

## **CONCLUSIONS**

The authors hope that the use of the metaphor of the elephants has been useful in the journey of the reader through the paragraphs and sections above. Perhaps the significance of stigma, fear and forgiveness become more apparent in this way.

From the outset, we have known that fear and stigma are familiar dimensions in the work in this field. But

we wonder about forgiveness. Is this within the scope of our interest soon enough? The case of the Déline Dene people and the Port Radium mine remediation speak to this in our view.

A formula for success is presented in this paper. It involves the elephants and the building blocks of legacy. Does this resonate? Does it provide you a framework for advancing your challenges?

Finally there are the unanswered questions that arise in the reading of this paper. We count our identification of these as a measure of success in assembling this paper. We suggest readers verify the questions relevant to themselves and pursue their elephants with purpose and care.

## **REFERENCES**

- [1] G. Ouzounian, Acknowledged Contributor, “*personal communication*”, November 2013.
- [2] D. Chambers, Acknowledged Contributor, “*personal communication*”, November 2013.
- [3] G. Wiatzka, Acknowledged Contributor, “*personal communication*”, November 2013.
- [4] R. Price, Acknowledged Contributor, “*personal communication*”, November 2013.
- [5] C. Haussmann, Acknowledged Contributor, “*personal communication*”, November 2013.
- [6] Déline First Nation and Indian and Northern Affairs Canada, “*Canada-Déline Uranium Table – Final Report, Concerning Health and Environmental Issues Related to the Port Radium Mine*”, Ottawa, Canada (2005).
- [7] Déline First Nation and Indian and Northern Affairs Canada, “*Moving Forward Together, The CDUT and the Legacy of the Port Radium Mine*”, Ottawa, Canada (2005).
- [8] G. Wiatzka, Acknowledged Contributor, “*personal communication*”, November 2013.
- [9] K. Lickers, Acknowledged Contributor, “*personal communication*”, November 2013.
- [10] H. Kleb and R. Zelmer, “*Planning for the Recreational End Use of a Future LLR Waste Mound in Canada – Leaving an Honourable Legacy*”, ICEM'07 Conference, Bruges, Belgium, September 2 – 4, 2007.
- [11] A. Talic, Acknowledged Contributor, “*personal communication*”, November 2013.
- [12] Abraham H. Wandersman and William K Hallman, “*Are people acting irrationally? Understanding public concerns about environmental threats*”, American Psychologist, Vol 48(6), 681-686, (1993).
- [13] A. Talic, Acknowledged Contributor, “*personal communication*”, November 2013.
- [14] M. R. Edelstein, “*Contaminated Communities: The Social and Psychological Impacts of Residential Toxic Exposure*”, Boulder, CO, (1988).
- [15] S. Berman and. A. Wandersman, “*Fear of cancer and knowledge of cancer: A review and proposed relevance to hazardous waste sites*”, Social Science & Medicine, 31:1, (1990).
- [16] P. Gobodo-Madikizela, “*Remorse, Forgiveness, and Rehumanization: Stories from South Africa*”, Journal of Humanistic Psychology, 42, 7-32, (2003)
- [17] American Psychological Association, “*Forgiveness: A Sampling of Research Results*”, (2006).

- [18] L. Benitez, J. Brown, D. McCauley and R. Zelmer, "*Early Progress In Building Confidence and Partnerships with Northern First Nations and Communities in Low-Level Radioactive Waste Remediation Projects in Canada*", WM2011 Conference, Phoenix, Arizona, USA, Feb 27 – Mar 3, 2011.
- [19] D. Shafer, Acknowledged Contributor, "*personal communication*", November 2013.
- [20] R. Price, Acknowledged Contributor, "*personal communication*", November 2013.
- [21] G. Wiatzka, Acknowledged Contributor, "*personal communication*", November 2013.
- [22] L. Benitez, M. Gardiner and R. Zelmer, "*The Low-Level Radioactive Waste Management Office: Thirty Years of Experience in Canada*", WM2013 Conference, Phoenix, Arizona, USA, Feb 24 -28, 2013.
- [23] L. Thompson, Acknowledged Contributor, "*personal communication*", December 2013.
- [24] G. Wiatzka, Acknowledged Contributor, "*personal communication*", November 2013.

#### **ACKNOWLEDGEMENTS**

The Authors wish to thank the "*Acknowledged Contributors*" listed below for expressing their views and providing quotations that are included in the text of this paper. Though not necessarily being involved in the writing of the body of the paper itself, the Acknowledged Contributors have had some discussion with the authors in the formulation of the ideas expressed in the paper.

List of "*Acknowledged Contributors*"

- 1. Benitez, L., Associate Researcher, University of Victoria, Victoria, Canada.
- 2. Chambers, D., Director of Risk and Radioactivity Studies, SENES Consultants Limited, Richmond Hill, Canada.
- 3. Geddes, B., Principal Engineer, Environmental Division, AMEC Environment & Infrastructure, AMEC Americas Limited, Calgary, Canada
- 4. Haussmann, C., President, Haussmann Consulting, Toronto, Canada.
- 5. Kleb, H., Vice President, Canadian Nuclear Association, Ottawa, Canada.
- 6. Lickers, K., Barrister & Negotiator, Kathleen L. Lickers, Barrister and Solicitor, Brantford, Canada.
- 7. Ouzounian, G., Director International, ANDRA, Paris, France.
- 8. Price, R., Professor Emeritus of Native Studies, U of Alberta, Edmonton, Canada.
- 9. Shafer, D., Acting Director, Office of Site Operations, DOE LM, Westminster, CO, USA.
- 10. Talic, A., Lic. Psychologist, Psykolog Consulting, Sweden.
- 11. Thompson, L., Mayor, Municipality of Port Hope, Port Hope, Canada.
- 12. Wiatzka, G., Principal Senior Project Engineer, Manager Mining, SENES Consultants Limited, Richmond Hill, Canada

**WM2014 Conference, March 2 – 6, 2014, Phoenix, Arizona, USA**

13. Zelmer, R., President, Environmental Legacy Associates, Ottawa, Canada.