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ESTABLISHING SOUND CHEMICALS MANAGEMENT

A PREREQUISITE FOR ACHIEVING THE MILLENNIUM DEVELOPMENT GOALS

by Kelly Rain*

INTRODUCTION

Modern society could not maintain its current standard of living without chemicals; however, sound chemicals management is necessary to prevent harm to human health and the environment. The United Nations Environment Programme – along with governments, relevant intergovernmental groups, nongovernmental organizations, and other stakeholders – has begun the process of establishing a Strategic Approach to International Chemicals Management (“SAICM”). The importance of this process is far-reaching, demonstrated by the fact that hazardous chemicals hinder the achievement of development targets, such as the Millennium Development Goals (“MDGs”).

This article explores the nexus between sound chemicals management and achievement of all eight MDGs, a link not explicitly stated in the MDGs themselves. Sound chemicals management plays a vital role in ensuring that the MDGs are reached. Recognizing this linkage is necessary to achieving the MDGs.

THE NEED FOR A STRATEGIC APPROACH TO SOUND CHEMICALS MANAGEMENT

Virtually every manmade good involves the use of intentionally produced chemicals. It has become clear that global chemicals production has the capability to impact environmental sustainability, human health, and the global economy in both poor and wealthy countries.

The chemical industry accounts for approximately seven percent of global income and nine percent of international trade.¹ Reporting \$587.8 billion aggregated sales in 2004; the global output of chemicals is projected to increase by 85 percent in the next twenty years.² The worldwide chemical industry is highly diverse in terms of size and geographical location. Employing more than ten million people worldwide, the industry has experienced continuous growth over the past 30 years. As a result, the value of chemical shipments has increased and has created a truly global industry with sixteen countries accounting for about 80 percent of global production.³ It is projected that by 2020 one-third of the world’s chemicals production and consumption will occur in developing countries.⁴

With the increase of chemicals on the market, public concern has risen due to various studies linking hazardous chemicals to cancer, respiratory diseases, reproductive diseases, impairment in the physical and emotional development of children, neurological diseases, and more. As a result of this international attention, numerous multilateral environmental agreements have evolved, including the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer,⁵ the 1998 Rotterdam

Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade,⁶ and the 2001 Stockholm Convention on Persistent Organic Pollutants.⁷ However, the international community continues to recognize an increasing need for a global, integrated approach to chemicals regulation since chemicals are produced, consumed, and pollute on a worldwide scale. Such a need was formally addressed at the World Summit on Sustainable Development, held in Johannesburg in 2002. The Johannesburg Plan of Implementation formally recognized the goal that by 2020 use and production of chemicals would be done “in ways that lead to the minimization of significant adverse effects on human health and the environment.”⁸ The action plan encouraged further development of a strategic approach to international chemicals management, encouraging international stakeholders to work closely in this cooperative effort.⁹

The ongoing process of establishing SAICM includes a focus on developing synergies between existing multilateral environmental agreements and programs related to chemicals. SAICM promotes an environmentally sustainable approach to international chemicals management; in particular, assisting developing countries balance an increasing chemical industry, while protecting the environment and human health.

RELATIONSHIP OF THE MDGs TO SOUND CHEMICALS MANAGEMENT

Progress in all eight of the MDGs depends on both the safe and affordable availability of needed chemicals and protection from the environment and health impacts of toxic substances. Recognition of this critical reality will lead to an increased likelihood of achieving the MDGs.

GOAL ONE: ERADICATE EXTREME POVERTY AND HUNGER

A strong and clear connection exists between poverty reduction and sound chemicals management. Poverty has been slowly declining in most parts of the world; for example, in Asia the amount of people living on less than one dollar a day dropped by nearly a quarter of a billion from 1990 to 2001.¹⁰ However, extreme poverty still exists throughout the world with more than one billion people surviving on less than one dollar a day and two and a half billion people living on less than two dollars a day.¹¹

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Poor populations are often constantly surrounded by toxic substances. Exposure occurs at home and at work, and the consequence can range from contracting diseases that may interfere with an individual's ability to retain employment to death. The hazards related to chemical exposure are some of the most critical burdens suppressing those trapped in poverty, and without a collective action to manage chemicals, extreme poverty cannot be eradicated. In urban settings, the poor often reside in areas close to landfills, incinerators, hazardous waste sites, or other industrial zones. Wealthier economic classes generally find such areas undesirable, since the environment is often saturated with hazardous chemicals. Unfortunately, most low-income populations lack knowledge of such dangers. Poor populations living in rural areas do not fare any better. Three quarters of the world's poor live in non-urban areas, and most are dependent on the agricultural sector for work.¹² For these laborers, improper use, storage, or management of pesticides and other chemicals increase their exposure to these hazardous materials.

Those living in poverty are often perpetually ensnared in occupations, like agriculture, that constantly expose them to chemicals. The great need for sound chemicals management in the workplace is clear from the fact that the International Labour Organization ("ILO") estimated that, of the 2.2 million workplace fatalities that occur each year, almost 440,000 are caused by chemicals.¹³

Additionally the ILO reports that, of the yearly average of 160 million work-related diseases, 35 million are due to chemicals.¹⁴

At the same time, chemicals play an invaluable role in society. The sound use of chemicals can be essential to improving agricultural and industrial productivity. Over 800 million people do not have an adequate food supply to meet their daily caloric needs.¹⁵ The responsible use of chemicals can improve agricultural yields and help lift people out of poverty and hunger. Therefore, society must strike a delicate balance between sound chemicals management to reduce the risk of unnecessary exposure for those living in poverty and to protect the rights to utilize chemicals to enhance one's livelihood.

Chronic hunger afflicts millions of people and is directly linked to their weakened immune system. In 2002, the number of chronically hungry people in the developing world was 815 million, which is a decrease from 824 million in 1990; however, the amount of persistently hungry people has increased by tens of millions in some of the most critical regions.¹⁶ For example, an increase in hunger is prevalent in areas such as sub-Saharan Africa and Southern Asia.¹⁷ According to the United Nations World Food Programme, sixteen percent of the total population in the developing world is chronically hungry.¹⁸ Exposure to

dangerous chemicals contributes to chronic hunger because those with suppressed immune systems must constantly battle illnesses: this leads to a vicious cycle where the poor are too weak to proactively fight against hunger and rise out of poverty.

Hunger and poverty are pervasive. The effort to eradicate poverty and hunger will prove fruitless if the poor are forced to live in a world contaminated by chemicals. Unless those in poverty and hunger have an opportunity to live in a less toxic environment through sound chemicals management, the cycle will never be broken.

GOAL TWO: ACHIEVE UNIVERSAL PRIMARY EDUCATION

Over 121 million children do not attend school worldwide, and this number has increased since 1990.¹⁹ In developing countries, one in three children do not complete five years of primary education; the majority of these children are girls.²⁰ Although a child's right to education was officially recognized in 1959

when the UN General Assembly adopted the Declaration of the Rights of the Child,²¹ many children are still denied their right to a primary education.

The failure to manage chemicals safely impairs the achievement of universal primary education in numerous ways. First, exposure to toxic substances can have serious and irreversible, adverse effects on children's mental development. Neurodevelopment disorders have been linked with exposure to several common toxic sub-

stances. For example, children prenatally exposed to mercury may have decreased intelligence, memory impairment, poor attention spans, limited language capabilities, and, in some cases, mental retardation.²² Exposure to polychlorinated biphenyls ("PCBs") have been connected to lowered aptitude and behavioral deficits.²³ Additionally, children exposed to lead suffer from cognitive deficits that persist throughout their lives.²⁴ Goal Two's target is to have all children complete a full course of primary education. However, the achievement of universal primary education cannot happen if chemical exposures continue to interfere with children's emotional maturation, intelligence, and ability to focus.

Achieving universal primary education is closely linked to poverty. Many children are robbed of their right to an education because their families need them to work for income, school fees cannot be afforded, or no community resources exist to build education facilities. Children from the wealthiest twenty percent of households in developing regions are three times more likely to attend school than children from the poorest twenty percent of households.²⁵ Since it is clear that poverty will not be alleviated until a process of sound chemicals management is established, universal primary education will not be reached without better chemicals management.

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GOAL THREE: PROMOTE GENDER EQUALITY AND EMPOWER WOMEN

Chemical pollution has a disproportionate impact on women because of different susceptibility and the likelihood of exposure. Biologically, women have a higher percentage of fatty tissue in which chemicals accumulate and are stored in the body. Traditional gender roles have also left women in a world saturated by chemicals. Cleaning products, cosmetics, and personal care products expose women to hazardous substances on a daily basis.²⁶ Additionally, women's necessary participation in various kinds of labor increases their exposure to chemicals. For example, in developing countries, women represent approximately 60 percent of the agricultural work force, thus exposing them to dangerous agrochemicals.²⁷ Women cannot be empowered if toxic substances are poisoning them, leaving this goal unobtainable without the acceptance of a process of sound chemicals management.

Goal Three's target is to eliminate gender disparity in primary and secondary education. However, there is still a large gender gap in school enrollments. Southern Asia, sub-Saharan Africa, and Western Asia greatly lack gender equality in primary schools.²⁸ According to data gathered from approximately 65 developing countries, gender parity is attained in about half of primary schools, twenty percent in secondary schools, and only eight percent in higher education.²⁹ Once again, this goal is directly linked to poverty because families that can afford to send only one child to school will most likely overlook girls. Sound chemicals management is needed to preserve women's intellect, maintain health, and continue the hard work necessary to lift herself out of poverty and reach gender equality.

GOAL FOUR: REDUCE CHILD MORTALITY

Child mortality cannot be reduced if children are exposed to chemicals in the womb, and then later born into a world polluted by chemicals. In 2003, 10.6 million children worldwide died before they were five.³⁰ Globally, an estimated 29,158 children under five die daily.³¹ The poisoning of fetuses and children with hazardous chemicals will prevent countries from reaching the target of this goal of reducing the under-five child mortality rate by two thirds.

Persistent organic pollutants ("POPs") are long lasting, bioconcentrate in the food chain, and bioaccumulate in the body. Mothers exposed to these chemicals pass the toxins to their children through prenatal exposures and through breast milk. Thus, virtually all children are born into this world having already been exposed to toxic chemicals. Exposure to chemicals weakens the immune system, leaving these babies more vulnerable to childhood diseases. Since breast milk is the best food for

infants, the contamination of this vital resource is of great concern. Child mortality cannot be reduced sufficiently if babies are being contaminated in the womb.

Toxic substances continue to bombard children after infancy. For example, some children are exposed to industrial pollutants at worksites or ingest pesticide-laced food. Pesticide poisoning is a major public health problem in many countries. In 1999, a group of children in Peru between the ages of three to fourteen ate a government-donated breakfast that was contaminated with the insecticide parathion.³² At least 24 children died, and another twenty required medical treatment.³³ Records from

eight regional hospitals in India indicate that accidental pesticide poisoning occurs in 50-90 percent of children less than five years of age.³⁴

Conversely, a reduction in child mortality is related to nourishment, and the sound use of chemicals can play a vital role in ensuring a safe and adequate food supply. Proper nutrition is a preventative step in the fight against child mortality because malnutrition increases a

child's susceptibility to disease. The sound use of chemicals is needed to assist in providing nourishment to children, without contributing to their early deaths.

GOAL FIVE: IMPROVE MATERNAL HEALTH

The sound, effective use of chemicals can be important for maintaining maternal and fetal health during pregnancy. Proper chemical use can improve nourishment, help facilitate prenatal monitoring and testing, and provide other services needed during a healthy pregnancy. Yet chemical pollution can impair the health of mothers, as it does the health of men and other women. Mothers weakened by chemical contamination are slower to recover from childbirth and more likely to contract other ailments.

Pregnant women exposed to chemicals at work can have serious impacts on maternal health. Exposure to chemicals in the workplace during the last six months of pregnancy may impact the development of the fetus and cause premature labor.³⁵ Additionally, continual workplace exposure reduces the amount of nutrients delivered to the baby.³⁶ In the United States alone, over 75 percent of individuals employed are of reproductive age, potentially exposing these women to workplace contaminants that may lead to reproductive dangers.³⁷

The workplace is not the only pathway to chemical exposure. A recent study confirmed the link between exposure to lead and the occurrence of pregnancy-induced hypertension.³⁸ Additionally, a small groundwork study by scientist in Japan linked the chemical bisphenol-A, which is widely used in plastics, food packaging, cans and dental sealants, to recurrent miscarriages.³⁹

Goal Five's target is to reduce maternal mortality by three quarters. Global progress is being made on this goal—but not in the countries most affected. Women of childbearing age must be

The transboundary properties of many pollutants allow . . . poisons to spread worldwide.

educated about the dangers of unsafe chemicals surrounding them at home and at work, and the amount of hazardous chemicals must be reduced. In 2000, an average of 450 women out of 100,000 live births did not survive.⁴⁰ Developed regions experience less maternal mortality. In order to reduce maternal mortality, and prevent the devastating loss of a parent to a child, sound chemicals management needs to be able to protect women from the hazardous chemicals that currently surround them in many parts of the globe.

GOAL SIX: COMBAT HIV/AIDS, MALARIA, AND OTHER DISEASES

Toxic chemicals contribute to cancer, respiratory distress, birth defects, chronic diseases, and neurodegenerative diseases. Toxic chemicals are most harmful to those with poor nutrition and concurrent diseases. This creates another linkage between the reduction of poverty and the attainment of this goal—those living in poverty are exposed to higher amounts of chemicals, making them more susceptible to disease. As a result, disease can act as a cause of poverty. For example, countries with a high rate of malaria tend to have lower economic growth than countries without malaria.⁴¹ Thus, sound chemicals management is needed in order to improve the health of individuals and help stimulate the economy of developing nations.

Chemical exposure can have serious implications for human health. Studies demonstrate that exposure to some chemicals decreases a person's ability to fight infections. For example, a recent study found individuals infected with the Epstein-Barr virus had been exposed to PCBs more than those not infected with the virus.⁴² Other hazardous chemicals, such as dioxin, have also been shown to have adverse immune effects.⁴³ Impairment of the immune system by chemical exposure can lead to a decreased quality of life, and might not be recognized in developing immune systems until years later.

Each year, diseases extinguish the lives and hopes of millions. Malaria is an example of a global disease. An estimated 350 million to 500 million people are affected by malaria each year.⁴⁴ Restricted use of some toxic substances, such as dichloro-diphenyl-trichloroethane ("DDT"), is vital for disease control in many regions. However, without a process to globally manage chemicals, hazardous substances will cause more harm than good.

Another target of this goal is to halt and begin the reversal of the spread of HIV/AIDS by 2015. Chemicals in the form of medicine and vaccines are essential to controlling the HIV/AIDS pandemic. However, exposure to certain chemicals can impair immunological function, exacerbating HIV/AIDS. Over twenty million people have died since the HIV/AIDS epidemic began; at the end of 2004, an estimated 39 million individuals were living with HIV.⁴⁵ If chemicals are allowed to continue to weaken

the immune systems of individuals worldwide, this is one more factor that will impede the reversal of HIV/AIDS.

GOAL SEVEN: ENSURE ENVIRONMENTAL SUSTAINABILITY

Toxic chemicals contaminate our air, food, land, and water, including our drinking water, rivers, and oceans. Currently, chemicals are present in all complex ecosystems and most of the world's natural resources. Plants, animals, and humans are all harmed by exposure to chemicals; most of these effects are irreversible. On the other hand, the sound use of chemicals can be essential in achieving environmental sustainability. For example, chemicals in the form of pesticides are often used to combat invasive plant species.

The transboundary properties of many pollutants allow these poisons to spread worldwide, leaving no ecosystem untainted and poisoning communities where use of the chemical is unknown. POPs have been discovered accumulating in the fatty tissues of arctic mammals. The levels of some of these chemicals, such as brominated flame retardants, have recently been found to be increasing.⁴⁶ As a result of their diet, indigenous people in the arctic are among the most heavily exposed to POPs in the world. For example, the breast milk of females in Greenland's Inuit population is so heavily polluted with chemicals that it could be classified as hazardous waste.⁴⁷ One of the targets of this goal is to incorporate the principles of sustainable development into country policies and reverse the loss of environmental resources. The situation in the Arctic is a prime exam-

ple of the pressing need for sound chemicals management in reaching this target by 2015.

Another target of this goal is to halve the proportion of the people without sustainable access to safe drinking water and basic sanitation. There was an eight percent increase in the percentage of the population using safe sources of drinking water between 1990 and

2002.⁴⁸ Although this figure sounds promising, as of 2002, over one billion people were still using water from unimproved sources.⁴⁹ Preventing drinking water contamination and, where that is not possible, purifying drinking water of toxic chemicals will not occur unless a process of sound chemicals management is established.

The final target of this goal is to improve the lives of at least one hundred million slum-dwellers by 2020. About one hundred million people are added to developing countries' urban communities through migration or birth each year; this equates to almost one billion people living in urban slums.⁵⁰ The hazardous materials that wealthier populations do not want in their backyard surround those living in urban slums. To help improve conditions of this rapidly growing population and to allow them to maintain their health and strength, toxic chemicals must not be allowed to contaminate their air, water, or land.

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GOAL EIGHT: DEVELOP A GLOBAL PARTNERSHIP FOR DEVELOPMENT

Establishing a global partnership for development is dependent on fair and open trade. Yet the global trading rules would collapse if they did not allow countries to protect their citizen's health and environment, including from the effects of hazardous chemicals. Existing and emerging international chemical agreements, such as the Montreal, Stockholm, and Rotterdam Conventions, regulate trade in chemicals in order to deal with safety concerns and ensure availability, where appropriate. Implementation at the national level is necessary for these agreements to be effective, and such agreements frequently include provisions for technical and financial assistance to developing countries.

SAICM plays an essential role in assisting developing countries balance a rapidly growing chemical industry with protection of the environment and human health. In order for developing countries to reap the financial benefits of the chemical industry –

helping alleviate poverty and improve their fiscal economy – international guidelines and support are critical. A process of sound chemicals management can help both developing and developed nations safely benefit from the chemical industry. It can also help maintain our current standard of living. All of this can be achieved without the dire consequence of toxic chemicals suppressing the poor and inhibiting productive development.

CONCLUSION

The nexus between sound chemicals management and development goals must be acknowledged in order to give impetus to fulfilling the MDGs by 2015. Sound management of chemicals should be given consideration in achieving all eight of the MDGs. Progress in each area will depend on the safe and affordable availability of chemicals. The establishment of an integrated approach for international chemicals management will allow for the safe availability of chemicals, when needed, while protecting the environment and health of humans. 

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ENDNOTES: ESTABLISHING SOUND CHEMICALS MANAGEMENT *Continued from page 31*

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