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IHLRP

INTERNATIONAL HUMANITARIAN LANDMINE REMOVAL PROJECT

Affiliated with

HUMANITY RESOURCES DEVELOPMENT, INC.

www.HRWDP-IHLRP.com

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HUMANITY RESOURCES WORLD DEVELOPMENT PLAN (HRWDP)

PROJECT **IHLRP**

FUNDING REQUIRED: **US $ 135,000,000,000** (3 - 5 year period)

NAME OF THE PROJECT: ***ENVIRONMENTAL WATER PROJECTS /WASTE REMEDIAL Developing Nations - HRWDP/WP/WR***

Approval #: WCPUN/Broz/8-00/H20/032798-2-2

PROJECT LOCATION: **45 Different Countries**

(Afghanistan, Angola, Azerbaijan, Bosnia and Herzegovina, Cambodia, Chad, China, Colombia, Croatia, Cyprus, Denmark, Ecuador, Egypt, El Salvador, Eritrea, Ethiopia, Falklands Islands (Malvinas), Georgia, Guatemala, Honduras, Islamic Republic of Iran, Iraq, Republic of Korea, Peoples Republic of Laos, Latvia, Lebanon, Liberia, Mozambique, Namibia, Nicaragua, Rwanda, Somalia, Sudan, Ukraine, Vietnam, Yemen, Yugoslavia, **plus** Neutral (safe haven) Countries, such as: Asia - Thailand, Philippines; Africa - Kenya, Tanzania, Gambia, Ghana; Baltic Countries - Czech Republic, Bulgaria, Romania; South America - Chile, Brazil; United States, Canada and United Kingdom)

PROJECT MANAGER(S):

JOHN J. BROZ
President, Humanity Resources Development, Inc. (HRDI)

John J. Broz, has earned a BSBA, MBA, DBA (Doctor of Business Administration), Honorary Doctor of Humanities, Registered Real Estate Broker and a Registered Mortgage Broker. He is currently the President of Humanity Resources Development, Inc. In addition to his current position, he is also: Director, Marketing Education Corporation, and a Volunteer in the Eucharistic Minister of Sacred Heart Church. His recent appointment was an Appointment-affiliate organization with United Nations. His past positions include, President - Monetary Development, Inc., and Chairman of the following organizations: Miss Hospitality, State of Florida; Educational Committee - Pan American Hospitality Exposition (represented by 18 countries and 32 States), Committee - State of Florida Restaurant Association; Director, State of Florida Restaurant Association; President, Palm Beach County Restaurant Association; President - Palm Beach County Hospitality Education, Inc.; and Former Instructor - Palm Beach Community College.

STEVEN JEFFREY LOWELL
Mission Director - International Humanitarian Landmine Removal Project (IHLRP)
Steven J. Lowell went to School of Applied Aeronautics, at Keesler AFB, MS and earned an Associate Degree that is equivalent to an Associate Degree in Electronic Technology.
He joined the United States Air Force in June 1972 and received an Honorable Discharge as Sergeant (E-4) in November1975. Steve is the Mission Director for International Humanitarian Landmine Removal Project. He is also the current Office Manager and Research Assistant for Light Warrior Press, Ltd, a Christian Publishing Company, since September of 1996. Currently, Steve

is

a consultant in the international arena and has a background in bank debentures/instruments, petroleum, precious metals and other commodities. Recently, because of his exemplary performance, overall accomplishments and contribution to society, Steve received two nominations: first nomination was, from the Governing Board

of Editors, for inclusion in the 10th Edition of the "International Directory of Distinguished Leadership", for the World, Select Leaders of the Century, and the second nomination was, from the American Biographical Institute Board of International Research, for "Man of the Year 2000" award, which is reserved only for men who have significantly enhanced world communities and professions.

JOHN JALWANG - Founder and Director of The Global Vision Institutions. Because of his diplomatic career and background, he is

able to solve community problems incurred by the innocent and suffering people around the world

<u>The following, are the key people that would assist John Broz, Steve Lowell, and John Jal Wang in this Project:</u>

KEITH MARTIN - His experience includes, assisting in the formation of the US Navy Seals.

HARALD SCHILLINGER - He is one of the two main demining contractors for this project.

LEO van VOGEL - He is one of the two main contractors in this operation, and he is Vice President - Asia Operations, for World Council of Peoples for the United Nations.

Sgt. Major, HAROLD "Jake" JACOBSON - He has recently retired as President for Special Forces Association, USA, in June 2000.

BERNIE BUCHTA Retired Colonel - He was Logistics Officer at the Warren Tank Automotive Command Center and the Maintenance Officer (over 230 helicopters), during the time of his career.

JAMES WIMBERLEY Retired Lt. Colonel, USAF. He was Squadron Commander for the 927th Civil Engineer before his retirement.

ENVIRONMENTAL WATER PROJECTS/WASTE REMEDIAL

I. Water Projects
II. Waste Remedial Projects
Approval #: WCPUN/Broz/8-00/H20/032798-2-2

Executive Summary

I. WATER PROJECTS

Water pollution is described as contamination of streams, lakes, underground water, bays or oceans by substances harmful to living things. The major water pollutants are, chemical, biological and physical materials that degrade water quality. Pollutants can be classified into eight categories, each of which presents its own set of hazards, and they are: petroleum products, pesticides and herbicides, heavy metals, hazardous wastes, excess organic matter, sediment, infectious organisms, and thermal pollution.

Water is necessary to life on earth. All organisms contain it; some live with it; some drink it. Plants and animals require water that is moderately pure, and they cannot survive if their water is loaded with toxic chemicals or harmful microorganisms. Pollution makes streams, lakes, and coastal waters unpleasant to look at, to smell, and to swim in. Fish and shellfish harvested from polluted waters may be unsafe to eat. People who ingest water can become ill, and, with prolonged exposure, may develop cancers, or women bear children with birth defects.

In recent years, a great deal of interest has been shown in the conversion of ocean and seawater. Several different processes, including distillation, electro dialysis, reverse osmosis and direct-freeze evaporation, have been developed for this purpose. Some of these processes have been used in large facilities.

The Humanity Resources Development, Inc. (HRDI), through the implementation of the International Humanitarian Landmine Removal Project (IHLRP), does not conform nor favor any form of water converted to potable by using chemicals, and they are further conscious about working within reasonable cost parameters. The three water systems that HRDI/IHLRP would like to develop and falls within the guidelines, are: *a)* ***Merlin Water***, b*)* ***Hurricane Tower***, *c)* ***Global Water.*** Completing the research on this project, five water contractors have been approved to include the international foundation for the protection of drinking water. They hold the leading edge in engineering. Some technologies are not made available to competitors; however, they will be made available for the World Council of the United Nations. Trouble shooting by satellite uplink communications, are among the advanced technology that is included in this project.

MERLINWATER *(New Antioxidant Health Breakthrough)*

Merlinwater has invented an array of global water sciences under one roof. This Portfolio Company, in which the Humanity Fund presently owns an equity interest and participation rights in certain gross revenues -- has searched numerous regions of the world to expand its knowledge of water. The result has been MERLINWATER - bottled water products that turn the new science of water into a portfolio of unique "water and beverage health solutions." It has also developed sophisticated new Micro Bottling equipment that delivers its unique water products to an Earthome community or other location from a MERLINWATER "vending machine", eliminating the need for regional bottling plants and over the road long distance transportation that is costly to the environment and consumer. The unique Merlin equipment, including holding tanks, requires only 400 square feet of space.

MERLINWATER provides a possible solution to certain areas struck by extreme weather or man-made disaster. When required, a mobile MERLINWATER unit can turn polluted wells or contaminated rivers or ponds into unique healthy water that may have benefits in the treatment of certain bacteria or virus epidemics. MERLINWATER is restructured water that begins with electrolysis. The alkaline "cathode water" is for drinking. The acidic "anode water" is used for everyday household cleaning. It can also be used as substitute for chemical pesticides. It is now well established that antioxidants counteract free radicals. When the body looses its natural abilities to produce an amble supply of antioxidants, free radicals attack healthy cells with aging and disease the result.

Tam West International

Tam West International will install an ocean water conversion system called Hurricane Tower - an ocean water tower that generates fresh water through hurricane simulation producing 6,800 gallons per day of potable water. This potable water can be marketed at $.0025 per gallon. The same system/process can also be used for cleaning up lakes and rivers. One advantage that can be benefited from this system, is the ability to provide power whenever necessary. The way this system works - it will need 200 tons of Municipal Solid Waste per day. This system will be connected to various communities with water reserve tanks and pressure towers.

The cost to build each Hurricane Tower is US$10,000,000 per plant, per nation - a total of US $450,000,000, for 45 nations. It was proposed that ECC, Inc, would be responsible for each stage of the project. Operational cost is estimated at $1,185,200 in a year basis.

GLOBAL WATER TECHNOLOGIES

Global Water Technologies (a division of Global Water Group, Inc.) has specialized in mobile, self-contained and fixed base water purification systems for disaster relief and military use. Global units have been used in five countries - from Kurdish refugee camps, during Desert Storm, to
deployment in Rwanda, Somalia, Haiti and now Bosnia. Global's systems have also provided pure drinking water immediately after hurricanes: Andrew, Inki, Opal, Fran, Georges and Mitch, as well as the floods in Mexico and the earthquake in Turkey.

Global Water Technologies Mission

The company is determined to provide the customers with quality services and quality products promote education, help provide a safe work environment and contribute to the Environmental Industry through constant research and technologies.

Global has been proven in industrial recycling, for cleaner processing, for healthful waste effluents and for providing safe drinking water in higher risk areas. Similarly, Global systems have provided clean, safe water for home use since 1991 - these systems purify contaminated fresh water, water from wells, streams, ponds, lakes and rivers, as well as from brackish water sources or seawater. Global water technologies manufacture water purification equipment that purified the terrible contamination (e-coil, cholera, etc.) in the waters of Honduras, Nicaragua and other countries hit by hurricanes and flooding.

Recently, Global has developed new water purification systems, which are mobile and come with their own generators. Each will produce about 190-200 gallons per hour, or about 4,300 to 4,800 gallons per day. Two can run off of one small generator. Each unit will cost only US$4,500 and the generator is US$995.00. A comparable military mobile unit that can produce this volume costs about US$20,000. Filter supplies for 60 days would cost about US$250.00. Global Water systems is a total "village" water flow system. Global Water Technologies' LS3 Water Purification Process cleans water in the three basic areas:

1. through filtration, it captures parasites, like giardia, cryptosporidium or amoebae
2. through its proprietary multi-media filtration pod which captures hazardous metals, like: lead or mercury, toxic chemicals, insecticides, pesticides, radon, chlorine, bad taste and odor
3. utilizing ultra-violet, it kills all bacteria and viruses

If the sources of water is brackish or seawater, the system must first desalinate the water and then complete the process described above.

II. WASTE REMEDIAL PROJECTS

Hazardous Wastes are solid, liquid, or gas wastes that can cause death, illness or injury to people or destruction of the environment, if improperly treated, stored, transported or discarded. Many dangerous substances can be used only with special precautions that decrease their risks. When discarded, these substances are no longer under the direct control of the user and may pose special hazards to people or other organisms that may come in contact with them. Because of Such potential risks, hazardous wastes are processed separately from ordinary wastes. Major sources or hazardous wastes, are: industrial wastes, agricultural wastes, household wastes, and medical wastes. Hazardous waste may pollute soil, air, surface water, or underground water. Pollution of soil may affect people who live in it, plants that put roots in it, and animals that move over it.

Hazardous waste has a broad definition in common use, but according to the United States law, hazardous waste has a narrow and specific meaning. In 1965, recognizing the need to segregate hazardous materials from general solid wastes - unwanted solid or semisolid substances - to prevent soil and underground water contamination, the Congress of the United States passed the Solid Waste Disposal Act (SWDA) to address the problems of solid waste and landfills. In 1976, the Toxic Substance Control Act (TSCA), regulating the use and management - including disposal - of PCBs and other toxic substances was passed. PCBs have been widely used in the installation of transformers and capacitors in electric power systems and had been discovered to cause cancer. Also in 1976, the Resource Conservation Recovery Act (RCRA) was passed, regulating the generation, transportation and management of hazardous wastes.

Worldwide, about 400 million metric tons of hazardous wastes are generated each year. In 1989, the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and Their Disposal was adopted at a meeting convened by the Environmental Program and attended by 116 countries. The convention requires reduction of hazardous wastes and their movements across borders between countries. As of January 1996, 97 countries had ratified the convention; the United States was not yet among them. About 90 countries have prohibited the import of hazardous wastes.

YINGLING SALES COMPANY INTERNATIONAL (YSC)

YSC International is a development company that is proceeding to build waste to energy facilities on the Pacific Rim and Asia. YSC will be using a technology developed in cooperation with the
Tennessee Valley Authority (TVA), a United States government agency and the Westinghouse Corporation. YSC does not sell technology, but utilizes joint ventures with those countries to

apply technology transfer on its humanitarian infrastructure projects. These efforts have been recognized and are supported by the Peoples Republic of China, the Republic of the Philippines and the government of India. The following United States governmental agencies have also supported this effort: the United States Asian Environmental Partnership (USAEP), the United States Aid for Industrial Development (USAID), Vienna, Austria in conjunction with the TVA on the biorefining environmental processes. Because of the environmental and humanitarian aspects of these infrastructure projects, YSC further qualifies in conjunction with approvals for IMF funding initiatives.

The Ethanol/Energy Project

Convert field waste or municipal solid waste to ethanol, furfural, and other useful chemicals. Residue after the acid hydrolysis process will be utilized as fuel Substitute for power plants. The technology was developed by the Tennessee Valley Authority's Agricultural and Environmental Protection Research Center, the largest one under the U.S. government. Up till now, the U.S. Government has spent over $40,000,000 to develop and complete this technology at both laboratory and pilot plant level. It is regarded as the most highly developed, cost efficient sound technology all over the world. The feasibility studies of the project has been completed respectively by TVA, YSC, The First Design Institute of Tianjin, Jilin Chemical Design Institute and the First Petroleum Design Institute of Shenyang. All studies showed a positive return of 37% to 45% return on investment dollars, according to the studies and joint venture will recover all the invested capital within four years following the construction completion. The profits are very attractive and the project will benefit joint venture partners, the government, as well as the farmers in many ways. The waste-to-energy project is also an ultimate solution to the environmental pollution in the local area.

Prior to the first project culminating, these projects were developed in harmony and mutual respect by both the Chinese and YSC delegates. The first project in Weifang Shandong province was approved by the State Council. The two other projects located in Benxi and Jinzhou were approved by Liaoning Province in 1996. The three additional projects will be developed in the southern portion of China. YSC have further joint venture agreement in place to represent establishment of solar energy development for all of Asia. This technology is NASA created and state of the art and company controlled. They have incorporated these technologies into its infrastructure projects. Many jobs will be created within these sets of projects. The estimated job economical impact overall will be the creation of 20,000 to 30,000 new jobs around each infrastructure facility.

YSC has established six additional projects that are hosted in Asia: three are in Thailand and the other three are in the Philippines. YSC owns 80% of the Thailand project, and 100% of the Philippine project. The development of these areas requires $2,000,000,000 US Dollar investment. These joint ventures represent the largest environmental efforts in the world. They are both environmental and humanitarian. This type of project can and will be profitable thus eliminating their dependency for support of the host countries and being self-sufficient and lucrative. These projects are designed as BOT (build, operate, transfer). These projects are ready to move forward upon funding. Specific site selection has not been completed in each area. General site has been selected. World markets will be supplied after the host countries' needs are met regarding bio-refined resources and by-products.

ITALIAN TECHNOLOGIES, RESEARCHES AND CONSTRUCTION (ITAL TRACO)

Italtraco is a leading technology company dedicated to the development and commercialization of its patented technologies covering areas of:

a) liquid-liquid & solid-liquid separation and conversion of wastewater into processed water

b) algorithms and computer codes for the numerical simulation of industrial fluid flows

c) solid state bioreactions

d) energy saving

The company's mission is to become the leading company in the field of non-miscible liquids separation market worldwide. The company will achieve this by continuing to innovate using unique "two-phase media" technology.

From 1977 until 1989, Italtraco operated almost exclusively for Saudi Arabia and the United Arab Emirates (UAE) in the following areas:

1. storage of low level waste heat for industrial refrigeration systems and power recovery systems

2. design and erection of plants for the production of biofertilizers and humic substances from selected organic waste

3. recovery of agricultural lands;

4. reclamation of sandy soils, by the organic method, in order to render them suitable for agricultural purposes.

In 1990, Italtraco has formed with FERTEC (the Researches and Technologies Company of the Ferruzzi-Montedison Group) a Consortium with which Itralco is the co-proprietor of the patent covering "Method for the enzymatic hydrolysis of the extra cellular mucilage's from the sea."

In 1991, Italtraco has agreed to do joint venture with Ferruzzi-Montedison Group, and was granted a license in some part of Europe, for the exploitation of its patented technology concerning the biotransformation by "expanded surface culture on solid state", of selected agro-industrial and agricultural waste and surplus, both liquid and solid, into bio-fertilizer and humic substances. In 1993, a new era began - Italtraco discovered an entirely new and revolutionary process, Zer-Oil - for the separation of non-miscible liquids (i.e., oil/hydrocarbons in water). This patent has been covered by international patent. In 1995, Italtraco has also patented another new technology which is to clean water/waste water - "purification process of polar liquid waste containing dispersions of solvated particles" - SPR. This process is characterized by the fact that the treated liquid is by no means altered chemically, in that the used molecule is natural food grade and in soluble and is thus fully eliminated by liquid/solid separation. These characteristics allow to re-employ the clear liquids obtained with the process of the invention, in the primary cycle from which the liquid waste has flown out.

Agro/Industrial Uses (liquid waste remediation)

This application of remediation technology is a critically important factor in light of current International and European guidelines on water consumption, imposing the partial or total recycling of waste waters resulting from the primary working cycles in which the water is used. This application totally purifies the liquid waste so that it can be reintroduced into the environment or recycled back into the primary cycle from which the liquid waste was originally derived, without further treatment.

Whey to Fertilizer Waste to Fuel

This application describes the recycling of whey and other agro-industrial waste as well as other agricultural residues/surplus, for producing, lactose powder, organic "bio-fertilizers" and mixed organic fertilizers. Also, a new "pelletizers" capable of transforming organic waste/surplus into valuable fuel ("bio-fuel").

Solid State/BioReaction Kinetics (waste remediation)

Application of this technology allows for a viable and cost effective method for the remediation of Biomass which compile and occur as a result of various agricultural, environmental, industrial and medical bio-technological waste site conditions. This biological treatment converts biomasses into valuable and useful products as a result of utilization, reclaiming the environment in the process. Creating fuels, fertilizers, potting soils, etc., while breaking down complex and refractory organic contaminants.

Oil - Water Separation

A. *Lifetime of the filter in connection with the presence of solid particles in suspension in the effluents to be treated.*

The relevant problems have found a solution by inserting a pre-filter (made of the same material as the separating filter) in the pressure line of the feeding pump, before the separating filter itself.

The insertion of this pre-filter in the pressure line (0.5 bar) of the feeding pump does not influence the pressure drop through the separation system as the pre-filter is not hydraulically connected with the system itself; therefore, the rate of flow through the oil-water separation system is not affected. This solid separation test by means of a pre-filter has been carried out during 7 days, 24 hours/day, without observing any malfunctioning of the system. The same effluents used for this test if treated without the pre-filter would have jeopardized the efficiency of the separation system after about 22 hours.

Beside having solved, in a very simple manner, the problems connected with the presence of solid particles in suspension, they have, at the same time, ascertained the efficiency of its material as a clarifier in the solid-liquid separation process.

B. *Presence of temporary/persistent emulsions in the effluents to be treated.*

The presence of persistent emulsions does not reduce the "barrier effect" of the surface tension created in our system; the non-emulsified oil fraction is rejected while the emulsified oil may pass. By using two separation filters in series, this problem is solved.

The first filter acts on the emulsified fraction as an efficient breaker; consequently, after this primary filter, there are no more emulsions in the liquid being processed and the second filter can thus perform a perfect and complete separation.

Italtraco has carried out a number of tests, each for the duration of about 8 hours (flow-rate: about 35,000 litres/sqm hour), using the following oils previously emulsified by means of a centrifugal pump:

* AGIP SINT 10W 50
* AGIP DECREA
* AGIP ACER
* AGIP OSO46; OSO115; OSO10

All these tests have confirmed the efficiency of this two stage separation process and that of the first as an emulsion breaker.

C. *Presence of permanent emulsions in the effluents to be treated.*

The "barrier effect" created by our filter against only dispersions does not affect the permanent emulsions, therefore, prior to effecting the actual oil-water separation, it is necessary to subject the effluent to a proper chemical or physical treatment aiming or breaking the permanent emulsion (i.e., the Italtraco's patented technology "Purification process of polar liquid wastes containing suspended solvated particles).

In the specific case under review, it also tested a conventional cutting oil emulsified with water and surfactants as present in the ordinary effluents of a machine shop. Very good results have been obtained by combining the chemical breakage of the emulsion with the oil-water separation effected with our system.

D. Presence of a muddy liquid that passed through the filter on account of the extremely small dimension of the suspected particles and the particular problems posed by the tendency of the oily fraction to adhere to the said particles.

The presence of such suspected solids entails the risk that some oil may pass through the filter.

The above effect has been greatly reduced by adding a pre-filter made of the same material of the filter itself, placed upstream of the filter, alternatively a complete removal of said suspended solids is obtained by a pre-treatment making

use of Italtraco's patented technology. "Purification process of polar liquid wastes containing suspended solvated particles."

ENTROPIC

Entropic has perfected a process that converts municipal and industrial organic waste materials into synthetic coal. The process is patented and was developed with grants totaling more than $2,000,000 from the United States Environmental Protection Agency (EPA). United States Department of Energy, Michigan, Department of Natural Resources and others. The technology utilizes proven industrial equipment and offers many environmental and economic advantages over landfills, incineration or conventional recycling programs.

Business Objectives

As a long term objective, Entropic hopes to transform itself into a global company and establish the Entropic technology as the absolute state-of-the-art in the municipal and industrial solid waste disposal industry. In the short term, however, Entropic desires to place into operation a commercial scale facility.

The process perfected by Entropic has been patented in the United States and ten foreign countries for both municipal and industrial waste applications. Entropic holds an exclusive, worldwide, royalty-free license to these patents subject to certain limited licensing rights retained by the holder of the patents, B&P Process Equipment and Systems, LLC (B&PPES), which also manufactures the principal piece of equipment essential to the Entropic process.

Entropic proposes to commercialize its technology by placing into operation a six inch twin screw and attendant equipment at a tire recycling facility currently in operation in the mid-Michigan area. This facility will process waste tires, auto shredder residue, waste wood and waste plastic. A substantial amount of the requisite solids handling equipment is already in place and operational at this facility. The additional equipment required is estimated to cost at US$2,200,000. Entropic
management believes that this equipment can be financed conventionally and that it can become operational within eight to twelve months from the date of execution of the related transaction documents. Success in developing this project is expected to reduce the financing costs associated with subsequent municipal facilities and allow marketing activities to proceed across a broad, global front.

Global Problem/Global Opportunity

Perhaps the most common environment-threatening problem facing the world community today concerns the disposal of municipal solid waste, which the USEPA defines as, “waste such as durable goods, non-durable goods, containers and packaging food wastes, yard wastes and miscellaneous inorganic wastes from residential, commercial, institutional and industrial sources.”
The USEPA projects that next year, the United States will generate 199,800,000 tons or 665,334,000 cubic yards of municipal solid waste. The collection and disposal of this waste comprises the waste management industry.

In the United States, municipal solid waste is primarily disposed of through employment of the following four methods, either alone or in combination:

a) Landfills - the disposal of solid waste is effectuated by one of four general processes, encapsulation, destruction, recycling and transformation. Landfills is an example of encapsulation in which waste materials are sealed in storage until future generations apply a more suitable technology.

b) Incineration - is an example of the destruction of solid waste materials. The organic components in solid waste are reduced to gases (primarily water vapor and carbon dioxide) by simple combustion.

c) Recycling - is a conservationist approach to ameliorating the adverse effects of waste disposal. Materials that can be reused by society (primarily metals, some specially plastics and papers) are separated from the water stream, preferably at the source (before curbside pick-up), and shipped to processing plants that commingle the materials with new or "virgin" material.

d) Composting - is an example of transformation of waste materials. In this example, the natural biological degradation of organic matter is used, under controlled conditions, to transform municipal solid waste into a new waste material that can acceptably be disposed of by commingling with soil.

The Entropic Process - Pyrolysis

Entropic employees a mechanical process known as, "pyrolysis", which:

1. eliminates the harmful environmental effects of other waste disposal methods;

2. offers certain economic advantages; and

3. produces a saleable fuel as its end product

Pyrolysis is the use of heat to break down complex chemicals into simpler components of higher value. Oil refineries have used pyrolysis (thermal cracking) for nearly a century to convert heavy crude oils into more valuable tube oils and motor fuels. The process is the same as that used to convert sugar into caramel or white bread into blackened toast. Large organic molecules (sugar, carbohydrates, plastics) are broken down into small pieces of various sizes. Small pieces become gases, medium size pieces become liquids (oils), and large pieces remain as solids. However, neither the gases nor the oils are compatible with current fuel products (natural gas and petroleum based oils), and cannot be successfully commingled and marketed as blends or substitutes for these products. Only the solid product (charcoal) has quality and value equal to or greater than its competing fuel product, coal, and can be commingled.

The inherent simplicity of the Entropic process, coupled with its ability to process large quantities of waste in a small reactor, results in a processing plant that is compact, more efficient and yet

much less costly than competing incineration technology. Because the conversion process is very "gentle", upgrading rather than destroying solid waste, the processing plant itself has little impact on the environment.

Environmental and Energy Economic Impacts

Environmentally, the technology diverts 85% or more of municipal solid waste from landfills, thus reducing ground water contamination and production of greenhouse gases. It automatically recovers a high percentage of economically recoverable recyclables, mostly metals. It also recovers up to 96% of the energy found in municipal waste, 70% in the form of a high quality, low sulfur synthetic coal.

High Moisture Waste Applications

For waste that contains high levels of moisture content (up to 60% or more), such as those of developing third world countries, the Entropic plant is modified slightly.

Competitive Edge

To the people of industrialized countries, the Entropic technology offers an economically and environmentally superior alternative to landfills, incineration and other technologies currently in use. The low sulfur, low moisture, and high BTU content make the Syncoal ideally suited for use in modern pulverized coal fired boilers.

Foreign Market

Foreign Market falls into three categories based primarily upon their level of industrialization:

A. **Highly Industrialized Nations**

These nations include: Western Europe, Canada, Japan, South Africa, South Korea and Taiwan. Most European countries and Japan utilize proprietary incineration technologies that are provided, to various degrees, protection from foreign competition.

B. **Industrializing Nations**

Countries in the periphery of Western Europe, former segments of the Soviet Union, China, the Middle East, Southeast Asia and Latin America, fall into this category. Some of the peripheral countries are members of the European Community. They usually lack the financial capacity to undertake strong measures to correct their environment shortcomings. Majority of these countries generate municipal waste having a high moisture content.

C. **Industrially Undeveloped Nations**

Few if any, industrially undeveloped countries possess the economic resources to institute an effective environmental program. Most however, need a modern environmental technology to address their solid waste problems. As the need increases an opportunity in both the industrializing and industrially undeveloped countries.

Contributions to World Environment

The Entropic waste conversion technology, in its cogeneration mode, offers all countries in the high moisture municipal solid waste category an unequaled opportunity to substantially improve their environmental impact on their local ecology, as well as the world's ecology. In those areas of the world where the citizens have little or no experience in paying for solid waste services, the Entropic technology will allow the subsidization of these services, the Entropic technology will allow the industrializing and urbanizing countries, often having limited financial resources to commit to containing or reducing environmental problems, no longer have to defer such vital undertakings or wait for the beneficence of other countries or international organizations.

Overall Financial Costs/Projections

To project the appropriate dollar cost per nation, using the above specialists/group - by spearheading the conditions of a given nation problem - it equates to an estimate of US $3,000,000,000 per nation x 45 nations = **US $135,000,000,000 Grand Total**.

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