

Minerals Technologies Inc.

# Corporate Responsibility & Sustainability Report

2010 UPDATE



## MTI Sustainability

The information contained in our sustainability reporting is supplemented by other Minerals Technologies' reports and documents. These include the Annual Report to Shareholders, the annual Form 10K and SEC filings, which can be found on our website: [www.mineralstech.com](http://www.mineralstech.com). We encourage readers to review all these sources to learn more about MTI in addition to our sustainability efforts.

This report may contain "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, which describe or are based on current expectations. Actual results may differ materially from these expectations. In addition, any statements that are not historical fact (including statements containing the words "believes," "plans," "anticipates," "expects," "estimates," and similar expressions) should also be considered to be forward-looking statements. The company undertakes no obligation to publicly update any forward-looking statement, whether as a result of new information, future events, or otherwise. Forward-looking statements in this document should be evaluated together with the many uncertainties that affect our businesses, particularly those mentioned in the risk factors and other cautionary statements in our 2010 Annual Report on Form 10-K and in our other reports filed with the Securities and Exchange Commission.

### PEOPLE

- We place the health and safety of people ahead of all else.
- We cultivate respect for individuals and for the diversity of cultures, beliefs, and perspectives.

### HONESTY

- We value honest, open and ongoing communications with our employees, customers, shareholders, suppliers and the communities in which we do business.
- We uphold the spirit and intent of the law and conduct our affairs ethically.

### CUSTOMER FOCUS

- We foster relationships with our customers based on trust and mutual benefit.
- We strive to enhance value to customers through improved product quality, customer service and innovation.



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## ACCOUNTABILITY

- We deliver profitable growth and higher returns for our shareholders.
- We manage our operations, our capital, and our business opportunities in a sustainable manner.
- We serve as good stewards of natural resources, and we employ sound environmental practices to protect the communities in which we operate.

## EXCELLENCE

- We constantly seek new, innovative technologies and efficient business processes to remain a market leader.
- We drive for success by focusing on continuous improvement in all facets of the business— processes, systems, products, services and people.



## Dear Stakeholders:

This is our third Sustainability Report, and each year we strive to improve on the prior report. Since 2007, Minerals Technologies and its employees have been focused on a number of areas that will make the company more sustainable over time. My first priority has been, and will continue to be, safety. In 2010, our lost workday rate was 0.75, which represents 1 injury resulting in days away from work for every 134 employee-years worked. While 2010 safety performance was not quite as strong as 2009, it was the second best in company history as measured by injuries per 200,000 hours worked. In 2010, we had 55 locations with no recordable injuries and over the last four years we have reduced our lost workday injury rate by 75 percent.

The MTI EHS Lead Team has set a goal of achieving a world-class safety record, as evidenced by a lost workday rate of less than 0.1 (one injury every 1,000 employee-years) by 2014. In order to achieve our goal, we are using a number of tools and processes. These include: a company-wide use of residual risk reduction and fatality prevention processes to identify and reduce hidden risks, a self-assessment system that targets the issues and concerns that are pertinent to MTI operations, and

use of Safe Workplace Action Teams consisting of process, organizational and safety experts that can provide rapid assistance to sites that need to improve safety performance.

Our Operational Excellence process, which is based on Lean Manufacturing principles, is producing significant economic returns in the form of improved production and reduced waste. During 2010, our EHS and Operational Excellence Lead Teams began merging safety with Lean tools to leverage both efforts. An example of the benefits provided by the joining of safety and Lean are the safety improvements that resulted when the Residual Risk Reduction process was added to all Kaizen, Standard Work and Total Productive Maintenance activities. Combining Lean and safety provided an excellent opportunity for a fresh look at the least risky way of completing a task.

Our responsibility to protect the environment remains a top priority and one where we have also realized improved performance. Each Business Unit has taken specific steps to reduce waste and the environmental impacts of their operations. MINTEQ is using recycled materials in many products and thus reducing the amount of material sent to landfills and the manufacturing impacts of producing virgin raw materials. The Paper PCC group has identified increased water efficiency and the use of byproducts as two areas of focus. These efforts will provide substantial environmental benefits to MTI and our customers. Performance Minerals is focusing on energy improvements and



**“Our responsibility to protect the environment remains a top priority and one where we have also realized improved performance.”**

“On the economic and social fronts, MTI saw a turnaround in our financial performance for 2010, posting record earnings in our history.”

increasing the ratio of product-to-mined materials. By using more of the mined material, Performance Minerals extends the life of the mine and reduces the amount of waste rock or material that must be managed.

MTI is affected by climate-change driven regulations, which require reduction of greenhouse gas emissions from our two lime production operations as well as at many of our customers and suppliers locations. MTI has fully complied with the greenhouse gas requirements that apply to our operations. Paper PCC has also provided assistance to our customers to help them benefit from the emission reductions resulting from use of our products.

MTI is now in full compliance with the European Registration Evaluation and Authorization of Chemicals (REACH) program. MTI has successfully registered all of the non-exempt substances that the company produces in the EU or exports to the EU.

On the economic and social fronts, MTI saw a turnaround in our financial performance for 2010, posting record earnings in our history. This was the result of some improvement in the economic environment in our major end markets of paper, steel, construction and the automotive industries. It was also the result of the dedicated efforts of our employees to improve productivity significantly through our Operational Excellence/Lean initiatives. Our operating income for 2010 was \$99 million, a more than 120-percent increase over 2009; we recorded \$3.58 in earnings per share and we returned to the \$1 billion level in sales.

Minerals Technologies has more than 100 locations in 26 countries, and we continue to be committed to sustainability and good citizenship in all the communities where we operate.

We are interested in learning what our stakeholders think about our sustainability efforts so we can improve in the future. Please send your thoughts to: [investor.relations@mineralstech.com](mailto:investor.relations@mineralstech.com).

Sincerely,



Joseph C. Muscari  
Chairman and Chief Executive Officer

## Key Impacts, Risks and Opportunities

As a consumer and producer of mineral products, we recognize our obligation to ensure that the raw materials we purchase and mine, as well as the fuel and energy needed to operate our processes, are used efficiently and safely. MTI is committed to protecting the health and safety of our employees, customers, visitors and neighbors. As an international company, MTI is committed to fully meeting or exceeding our legal and ethical requirements in all of our activities. The company employs extensive land restoration processes to protect the biodiversity and natural habitats at each of our mining operations. We are also putting into practice process and operational improvements that help us reduce our fuel and electrical consumption, which also reduces greenhouse gas emissions.

MTI has been an operating entity since 1992, when it was formed through an initial public offering. We have grown from a company that had \$360 million in revenues in 1992 to \$1 billion in 2010. The company is dedicated to profitable growth and improving shareholder value.

In 2007, the company adopted four major initiatives aimed at improving safety, efficiency, changing corporate culture and assuring sustainable growth. These initiatives are guided by cross-functional lead teams for Environmental, Health & Safety; Operational Excellence; Expense Reduction; and Technology and Innovation. MTI has made significant progress in all of these areas. Due to the intense focus placed on safety at all levels of the organization, MTI had its lowest injury rates during 2009 and the second lowest in 2010.

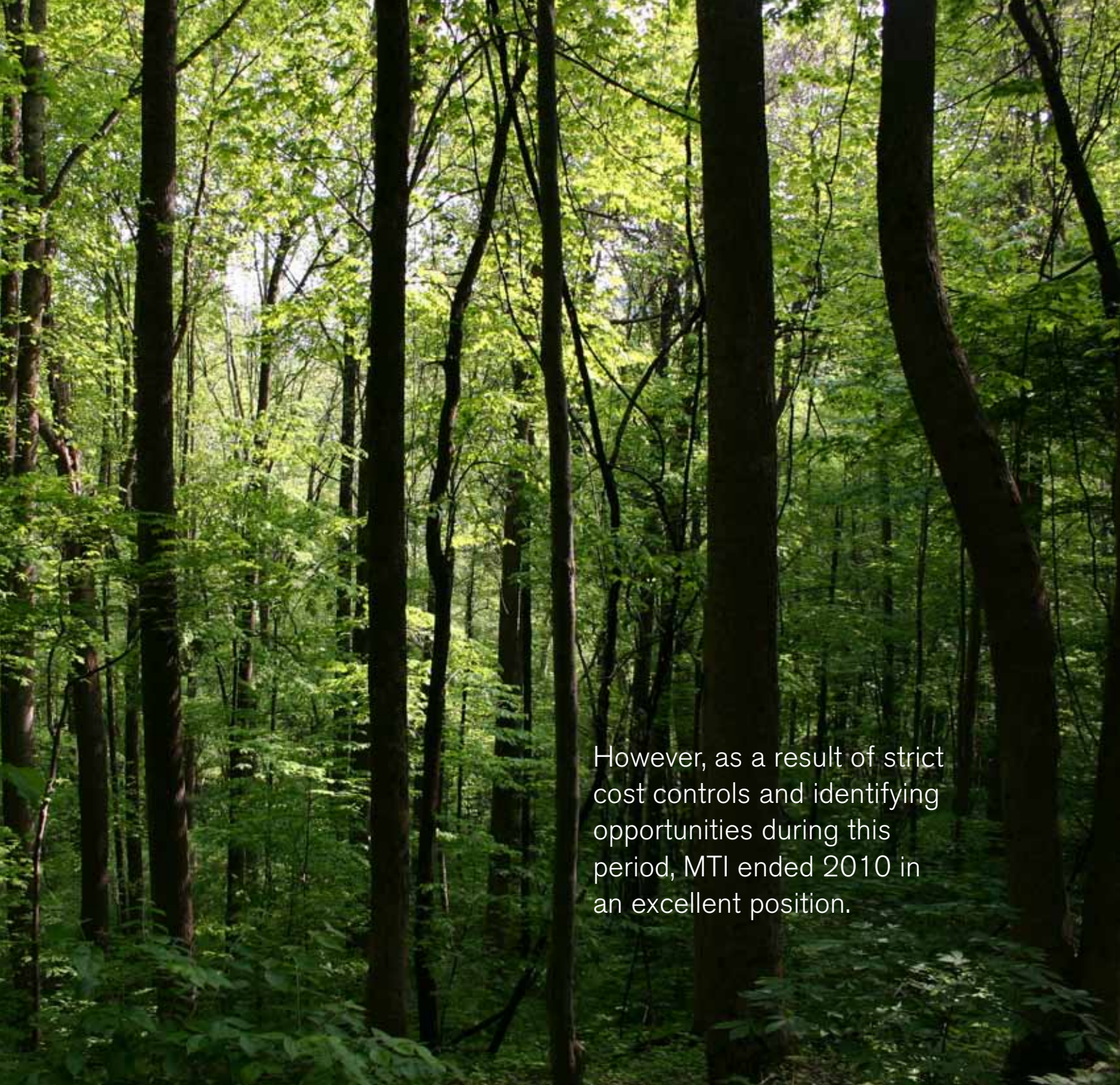
Our efforts in Operational Excellence and expense reduction have also begun to yield results. Sales per employee, for example, have increased from \$368,000 per employee in 2007 to \$449,000 per employee for 2010. The company has also reduced total expenses by more than \$40 million between 2006 and 2010. Recently, MTI has

begun combining aspects of the Safety and Operational Excellence programs. As a result, MTI is beginning to reap additional safety and efficiency benefits as well as ingrain both programs into the company culture.

Our focus on innovation and new product development provide further opportunities for growth. The Technology Lead Team put in place a new product development process, which includes employee involvement in generating new product ideas. Today, we have about 50 new product ideas in a pipeline that had nearly run dry in 2007. We continue to look for opportunities to penetrate new markets and take advantage of our expertise in crystal engineering.

A decrease in economic activity, as we saw in 2009 in our end markets of paper, steel, construction and automotive poses a significant risk for MTI. We are seeing a sluggish recovery in those markets, but paper and steel production remain between 15 to 20 percent below pre-recession levels. However, as a result of strict cost controls and identifying opportunities during this period, MTI ended 2010 in an excellent position. Although there are still concerns and questions about the global economy, MTI is well-positioned for the future.





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## Organizational Profile

Minerals Technologies Inc. is a resource- and technology-based company that develops, produces and markets worldwide a broad range of specialty mineral, mineral-based and synthetic mineral products and supporting systems and services. Headquartered at 622 Third Avenue in New York City, MTI has two reportable business segments and three business units. The business units serve a variety of end markets with a broad range of specialty mineral, mineral-based and synthetic mineral products and supporting systems and services. These end markets include: paper, steel, construction and automotive. A technology driven company, MTI places great emphasis on the research and development of technologically advanced new products, which has allowed it to anticipate and satisfy changing customer requirements. This, in turn, has allowed us to create new market opportunities through new product development and product application innovations.

The business units are: Paper PCC (precipitated calcium carbonate); Refractories, which is operated by Minteq International Inc.; and Performance Minerals, which includes our Processed Minerals and Specialty PCC businesses. The two reportable segments are: Specialty Minerals and Refractories. Specialty Minerals produces PCC and mines and processes limestone and talc. These products are used principally in the paper, building materials, and automotive industries. Refractories, which also include metallurgical wire and application equipment, are used primarily in the steel industry.



## Specialty Minerals Segment

### PCC Products

MTI is the largest supplier of PCC to the worldwide paper industry. At the end of 2010, the company had more than 50 Paper PCC plants in 16 countries on site at paper mills owned by the world's largest paper companies. The company's PCC is used primarily as mineral filler in the production of coated and uncoated wood-free printing and writing papers, such as office papers. MTI also produces PCC used to coat both wood-free and groundwood papers. In addition, the PCC produced by our Performance Minerals facilities is used as a key ingredient in the polymer, construction, automotive, food and pharmaceutical industries.

MTI manufactures several customized forms of PCC using proprietary processes. Each product form is designed to provide optimum balance of paper properties including brightness, opacity, bulk, strength and improved printability. The company's research and development and technical service staffs focus on expanding sales from its existing Paper PCC plants as well as developing new technologies for new applications. Our new Fulfill™ platform of PCC products launched in 2010, allow papermakers to substitute our PCC for more expensive wood fiber.

### Processed Minerals

MTI mines and processes natural mineral products, primarily limestone and talc. The company also manufactures lime, a limestone-based product. Lime is used primarily as a raw material for the manufacture of PCC, and is sold commercially.

The company mines, beneficiates and processes talc at its Barretts site, located near Dillon, MT. Talc is sold worldwide in finely ground form for ceramic applications and in North America for paint and coatings and polymer applications.

The company's natural mineral products are supported by the company's limestone reserves located in the western and eastern parts of the United States, and talc reserves located in Montana. The company estimates these reserves, at current usage levels, to be in excess of 30 years at its limestone production facilities and in excess of 20 years at its talc production facility.

## Refractories Segment

### Refractory Products and Markets

The Refractories segment produces and markets a broad range of monolithic and shaped refractory materials, services and application and measurement equipment, and calcium metal and metallurgical wire products. These products are used primarily in high-temperature applications in the steel, non-ferrous metal and glass industries.

Refractory product sales are supported by our Steel Mill Service groups, which provide on-site technical service support and use proprietary application equipment developed and supplied by our application experts. The company's proprietary measurement and robotic application systems allow for precise remote-controlled application of our refractory products. The use of our engineered refractory products and application systems enable MINTEQ to greatly extend the life of the high-temperature equipment while improving the safety of our Steel Mill Service teams.

### Metallurgical Products and Markets

The company produces a number of other technologically advanced products including calcium metal, metallurgical wire products and a number of metal treatment specialty products. The metallurgical wire products are injected into molten steel to improve castability and reduce imperfections. MTI manufactures calcium metal and purchases calcium in international markets.

## MTI Locations Worldwide

Minerals Technologies has more than 100 locations in 26 countries, with 75 plants, eight research facilities and 20 sales and administrative offices worldwide. The company operates in: the United States, Australia, Canada, Belgium, Brazil, China, Finland, France, Germany, Holland, Indonesia, Ireland, Italy, Japan, Malaysia, Mexico, Poland, Portugal, Singapore, Slovakia, South Africa, South Korea, Spain, Thailand, Turkey and the United Kingdom.

Minerals Technologies is listed on the New York Stock Exchange under the symbol MTX. More than 95 percent of the company's ownership is comprised of institutional investors.



## MTI Awards

- The Refractories Institute— 2008 Presidents' Safety Award for locations that have completed 2008 without a lost workday injury
  - Baton Rouge, LA
  - Bryan, OH
  - Old Bridge, NJ
- Voluntary Protection Program— OSHA outreach safety program and certification
  - PCC Pensacola, FL
  - PCC Courtland, AL
- 2008 Mine Safety and Health Administration (MSHA) Sentinels of Safety— Second Place
  - Barretts, MT
- MSHA 2007 Safe Mine Achievement Awards (Awarded in 2008 for 2007 performance)
  - Treasure Mine and Regal Mine operations at Barretts
- California Construction and Industrial Minerals Association (CalCima) award for outstanding safety performance in 2008.
  - Lucerne Valley, CA
- County of San Bernardino proclamation award granted by the County Supervisors for four years worked without a lost time accident.
  - Lucerne Valley, CA
- MSHA Sentinel of Safety award for outstanding safety performance in the Quarry. (Awarded in 2008 for 2007 Performance.)
  - Lucerne Valley, CA
- Received recognition award from San Bernardino County Supervisor, Brad Mitzefeld, for "One Million Hours worked without a lost time accident" at the Family Day Celebration.
  - Lucerne Valley, CA
- MTI has accepted the responsibility to act as the President of the Consortium of Calcium Carbonate manufacturers as part of the EU regulation known as REACH (Registration, Evaluation, Authorisation and Regulation of Chemicals). Ludo Schyvinck will be appointed as Chairman of the Board of the Consortium.

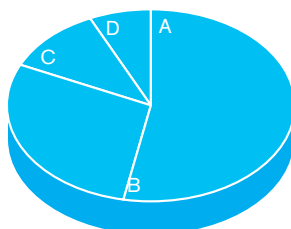


## MTI Sales

As of December 31, 2010 the company employed 2,132 persons, of whom 1,003 were employed outside of North America. Worldwide net sales for 2010 were \$1,002.4 million, a 10-percent increase from the \$907.3 million recorded in 2009.

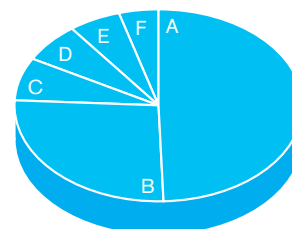
At the close of 2010, the company had \$782.7 million in equity and \$92.6 million in debt for total capitalization of \$875.3 million.

2010 Net Sales by Geographic Area



A: United States	53.3%
B: Europe/Africa	28.7%
C: Asia	11.1%
D: Canada/Latin America	6.9%

2010 Net Sales by Business Unit



A: Paper PCC	49.5%
B: Refractory Products	26.4%
C: Metallurgical Products	7.3%
D: Ground Calcium Carbonate	6.6%
E: Specialty PCC	5.8%
F: Talc	4.4%

## Report Parameters

In 2007, the Environmental, Health and Safety (EHS) Lead Team was organized with the purpose of significantly improving MTI's safety program and environmental performance. The Team was given the charge of providing guidance and deploying effective policies, practices, procedures and standards to enable each location to achieve these breakthrough improvements. Currently, the team currently consists of the Vice President of Performance Minerals, the Vice President of Supply Chain, the Director of Environmental, Health and Safety, and representatives from each of the company's geographic regions and business units.

In 2007, the EHS Lead Team published the first MTI Sustainability Report summarizing the relevant sustainability aspects of the company's activities. The Team used the Global Reporting Initiative (GRI) Level C guidelines as the guide for the report. The EHS Lead Team recognized that the process of collecting and summarizing the information necessary for this report would result in a better understanding of the impacts of the activities of each business unit and location.

This third report reviews the key sustainability topics that are relevant to MTI's activities. We used both an internal process and feedback from MTI's stakeholders to identify and evaluate the Indicator Aspects listed in the GRI guidelines.

The data for 2010 should be compared to the baseline period of 2006 to 2009. The report is updated on an annual basis. Questions, comments and suggestions about this Sustainability Report should be directed to the following address:

### Investor Relations

Minerals Technologies Inc.  
 Corporate Communications  
 622 Third Avenue  
 New York, New York 10017 USA  
 Phone: +1-212-878-1831  
 Email: [investor.relations@mineralstech.com](mailto:investor.relations@mineralstech.com)



## Process for Defining Report Content

The major goal of this report is to identify and quantify the key topics and indicators relevant to the company's activities. The content of this third report is based upon input from routine discussions with customers and investment companies as well as a formal process for soliciting input from key selected stakeholders.

This update of the MTI Sustainability Report summarizes the environmental activities of all mining and manufacturing operations owned and operated fully or in part by any of the business units operating as of December 31, 2010, including joint ventures. The report also reviews the economic and social impacts of our manufacturing, administrative, research and Steel Mill Service locations—those steel mills where our employees provide service. These boundaries cover all operations over which MTI exercises direct control. The report does not include the activities of suppliers, nor does it cover the activities of tolling (outsourced) manufacturers. A small number of US and European tolling operations provide finished product and intermediates to MTI. MTI does not direct the activities of these tolling operations.

### This update has the following limitations:

- Some manufacturing operations are unable to collect specific environmental metrics. Where data was not available for the reporting period, estimates were made based on similar operations or historical information. We continue to improve the process of gathering the pertinent environmental metrics from all operations.
- The company's administrative and research locations do not record energy use, water or wastewater flows or solid waste. As the total impacts from these operations are not significant compared to those of the manufacturing operations, this information has not been collected.

- No data on energy use, water use or solid waste is readily available for the Minteq International Inc. Steel Mill Service locations, which are located within customers' steel mills. Typically, the Steel Mill Service crews rely upon the customer to provide energy, water and waste disposal at the application site within the steel mills. These requirements are a small fraction of the overall impacts associated with those of the steel mill. One area for improvement will be to assess the availability and significance of this data for the Steel Mill Service Groups.
- This update includes the greenhouse gas impacts of the electrical use at the Performance Minerals and Minteq manufacturing operations. At this time, MTI does not have site-specific greenhouse gas emission factors from the Paper PCC host paper mills that supply these operations with electricity. Due to the fact that the paper mills often use co-generation systems rather than public electrical suppliers, the emission factors must be gathered on an individual site basis. This information will be obtained in the future from these suppliers so as to calculate the carbon footprint of indirect energy use for the entire company.

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### Example of MTI's Sustainability Efforts: Reduce Solid Waste & Energy Use

- The company is implementing efforts to recover the residuals from the PCC manufacturing process or to use the residuals for agricultural or soil reclamation facilities rather than sending them to landfills. MTI is also making changes in PCC process equipment, such as modifying agitation systems, pump seals and motors to reduce energy and water demands.

## Governance, Commitments & Engagement

Minerals Technologies' governing body is its eight-member Board of Directors. Joseph C. Muscari is Chairman of the Board. In addition to Mr. Muscari, the Board consists of seven independent directors. In order to maintain and reinforce alignment of leadership between management and the Board, the chairman is also the chief executive officer. The Board of Directors has three committees—Audit; Corporate Governance & Nominating; and Compensation.

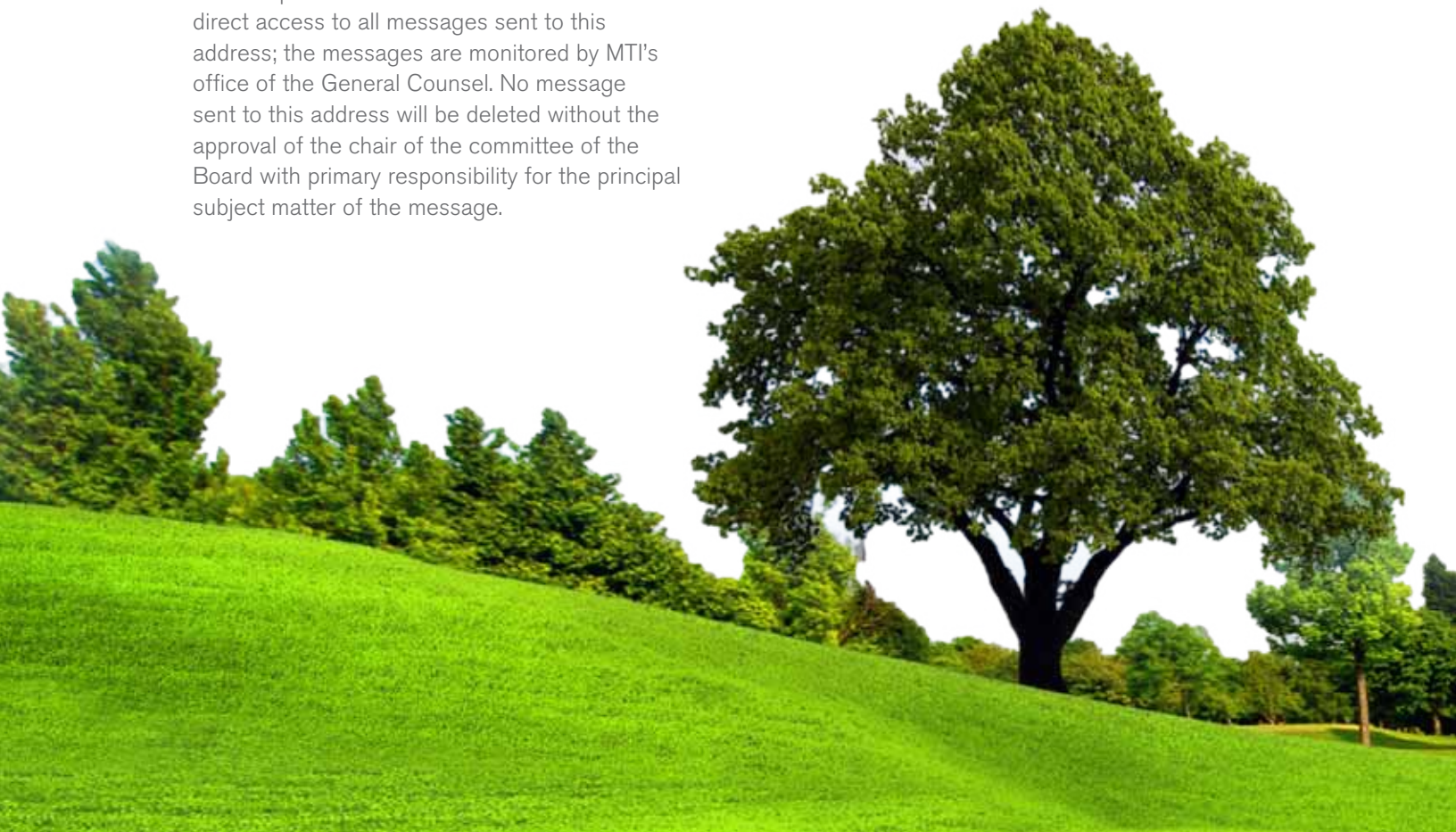
### Mechanisms for shareholders and employees to provide recommendations or direction to the Board include:

- Stockholders and any other interested parties may communicate by e-mail with the independent members of the Board at the following address:

*independent.directors@mineralstech.com.*

The independent members of the Board have direct access to all messages sent to this address; the messages are monitored by MTI's office of the General Counsel. No message sent to this address will be deleted without the approval of the chair of the committee of the Board with primary responsibility for the principal subject matter of the message.

- To propose items of business for consideration at the company's Annual Meeting, written proposals must be made through the process laid out in the company's Proxy. These include: If intended to be considered at an annual meeting, the nomination or proposed item of business must be received not less than 70 days nor more than 90 days in advance of the first anniversary of the previous year's annual meeting.
- An Investor Relations contact is provided on the MTI website.
- The company has an MTI Hotline, which allows employees to report any corporate governance concerns. These concerns go to the General Counsel and are then presented to the Audit Committee of the Board.



### The primary duties of the Audit Committee are:

- To assist the Board of Directors in its oversight of (i) the integrity of the company's financial statements, (ii) the company's compliance with legal and regulatory requirements, (iii) the qualifications and independence of the company's independent registered public accounting firm, and (iv) the performance of the company's internal audit function and independent registered public accounting firm;
- To appoint, compensate, and oversee the work of the independent registered public accounting firm employed by the company (including resolution of disagreements between management and the auditors concerning financial reporting) for the purpose of preparing or issuing an audit report or related work. The independent registered public accounting firm shall report directly to the committee; and
- To prepare the report of the committee required by the rules of the SEC to be included in the company's annual proxy statement.

### The primary duties of the Compensation Committee are:

- To participate in the development of our compensation and benefits policies;
- To establish, and from time to time, vary the salaries and other compensation of the company's employee-directors and other elected officers; and
- To participate in top-level management succession planning.

### The primary duties of the Corporate Governance and Nominating Committee are:

- The identification of individuals qualified to become Board members and the recommendation to the Board of nominees for election to the Board at the next annual meeting of stockholders or whenever a vacancy shall occur on the Board;
- The establishment and operation of committees of the Board; and
- The development and recommendation to the Board of corporate governance principles applicable to the company.



## Stakeholder Groups

MTI used both formal and informal methods to identify stakeholders and obtain input regarding the topics and indicators that are material to the company's activities. Those stakeholders who provided input include:

- Customers
- Employees
- Shareholders
- Suppliers
- Board of Directors

### Example of MTI's Sustainability Efforts: European Satellites Develop Environmental Improvement Program

Some of our operations are putting tools in place to identify and monitor environmental impacts. "Working with customers at host paper mills and surrounding communities, MTI reports the progress of this initiative in a quarterly report, which is then reviewed annually with internal and external stakeholders," says Ludo Schyvinck, Director of Sales and Marketing for PCC. "An example of an initiative that has been deployed at different satellite PCC plants is a program to reduce the amount of waste (grit) from the process to be disposed to landfill."

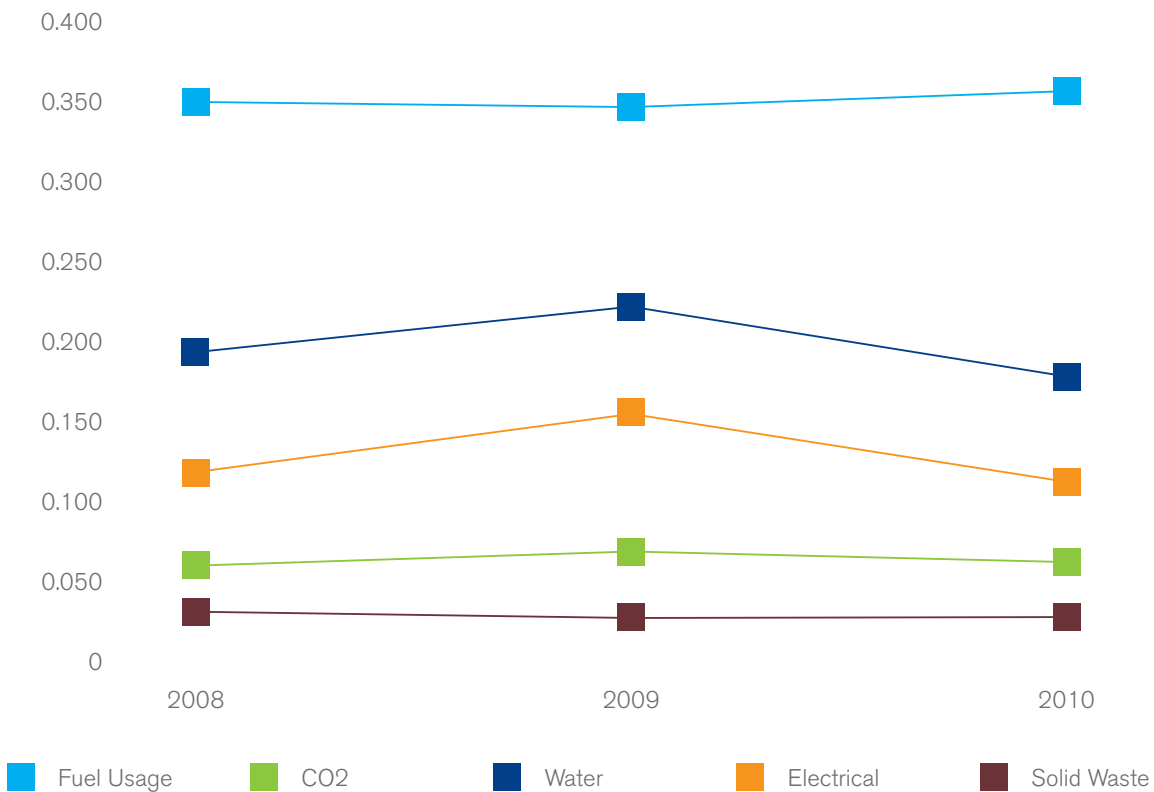


## Environmental

The information provided in this section is a summary of the metrics developed to assess the environmental impacts of our manufacturing operations. Data obtained for the period 2006 to 2008 serves as a baseline for comparison against the improvements that have been realized as a result of the efforts by everyone in the company.

The various environmental metrics applicable to operations are presented individually. However, as shown in Figure 1, many of the metrics are closely tied to production rates, as measured by total tons of product produced. Improvements in these areas will be identified by decreases in the environmental measures (such as water use and electrical consumption) that are independent of production changes. Changes are discussed in the specific section of the report.

**FIGURE 1.**  
2010 Comparison of Sustainability Metrics to Production Output  
(Unit of input per Ton Product)



Units: Fuel Usage: Million BTUs/Ton; CO2: Tons/Ton Electrical: MW/Ton  
Water: Million Gal/Ton Solid Waste: Ton/Ton

## Energy

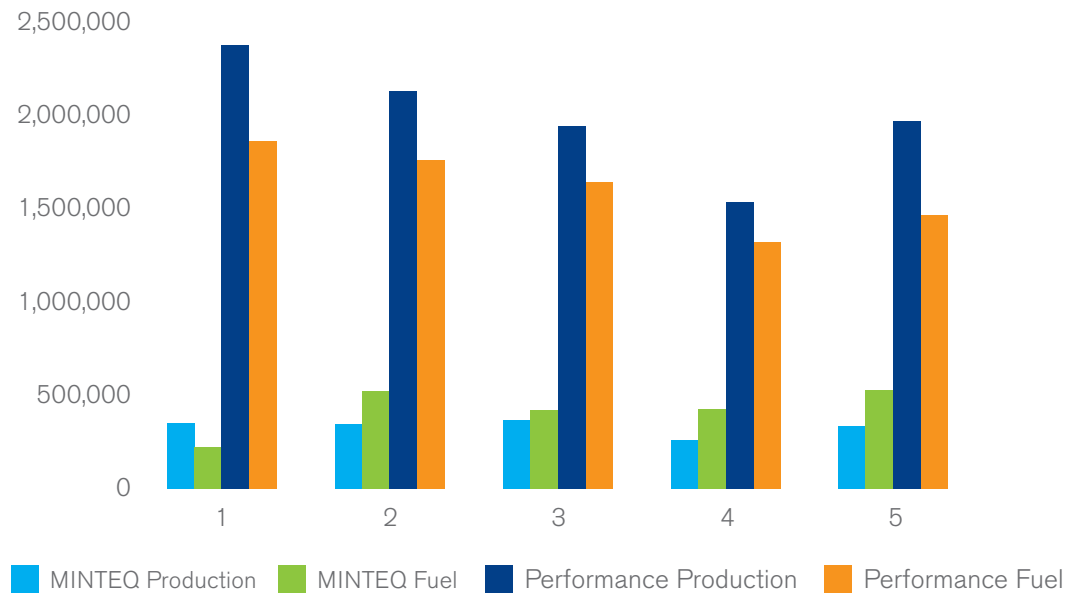
Performance Minerals and Minteq use a variety of fossil fuels in process dryers, kilns and other equipment as for heating buildings. The facilities use a mix of natural gas, propane, diesel oil, Number 2 and 6 oil and other liquid fuels. No MTI facility uses coal or other solid fuel. The reported fuel use for each site has been converted into million BTUs and is presented in Figure 2. Note that this chart does not include the Paper PCC facilities. The Paper PCC process does not include any combustion or other fuel-using operations. The only fuel used at these facilities is a very small amount for forklifts and space heating equipment.

The amount and impacts of the fuel used within Paper PCC has a negligible impact on the overall company usage and thus are not included in Figure 2.

As can be seen in Figure 2, the amount of fuel used by the Performance Minerals operations increased at a lower rate than has production between 2009 and 2010. This is due in part to the continuous improvement projects that have been implemented at these locations. Lean events at the mining and mineral processing plants are enabling these locations to produce more product with less fuel. These fuel efficiency improvements will continue in all Business Units as all locations benefit from these programs.

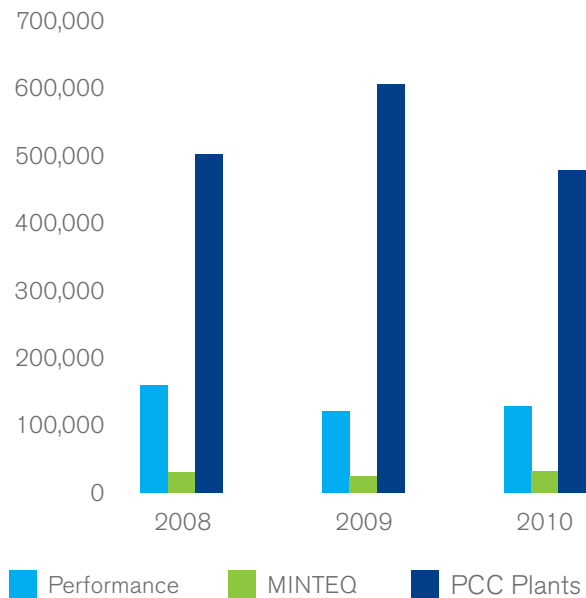
FIGURE 2.  
Process Fuel Usage  
(Fuel - Million Btu's; Production - Tons)

Note: PCC Plants do not use significant amounts of fossil fuel.



Many, but not all, MTI production operations record electrical usage. Where data is missing, the electrical use has been estimated using ratios of electrical use to production rates. Figure 3 presents electrical use in megawatt hours. Both Performance Minerals and Paper PCC have improved electrical efficiency in the past two years. This is reflected in the ratio of electricity used to production in Figure 1. The changes are the results of Lean activities as well as other factors such as plant closings and product lines. The improvements due to Lean will become more evident in future years as MTI uses these tools to improve our efficiency.

**FIGURE 3.**  
Electrical Usage  
(MWH)



## Water and Effluent

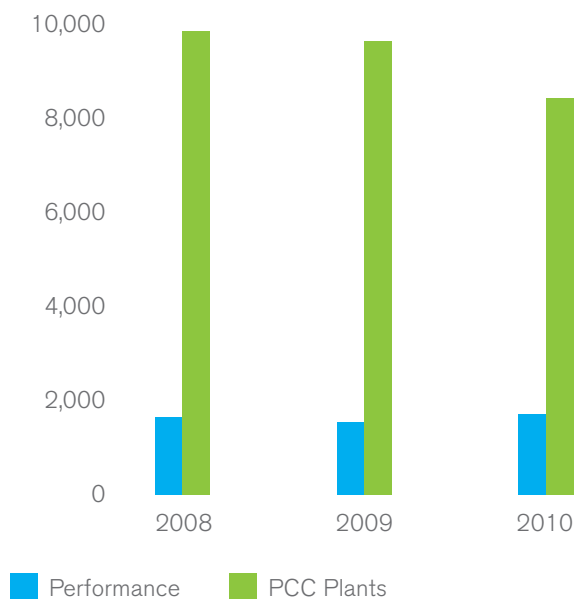
Performance Minerals and Paper PCC operations use water for process and cooling purposes. Minteq operations use only a small amount of water in preparing cast shapes and making small amounts of specialized products. As stated in the graphs, the amount of water used by Minteq is insignificant compared to the water use in Performance Minerals and Paper PCC.

Much of the water used in the PCC process is either shipped to the customer with the final product (typical filler PCC products contain 80 percent water; typical coating products contain approximately 20 percent water) or is lost via evaporation. Where water data is missing, it has been estimated using ratios of water use to production rates from previous years or similar operations. As can be seen in Figures 1 and 4, both Performance Minerals and Paper PCC are implementing technologies to reduce water use.

The majority of the process and cooling water from Performance Minerals' facilities is discharged to surface water after treatment. A portion of the water used by Performance Minerals is reused, drains to groundwater through settling ponds or is lost through evaporation. Minteq produces no process wastewater; the small amount of water used in Minteq processes either remains with the product or evaporates in the cast shape drying ovens.

FIGURE 4.  
Water Usage  
(Million Gallons)

Note: MINTEQ uses less than 10 million gallons of water per year.



PCC plants discharge process effluent to wastewater treatment plants operated either by the host paper mills or by local municipalities. Cooling water from PCC plants is managed in a variety of ways, including return to the host mill for use in their systems, direct discharge of clean cooling water to surface water and discharge of cooling tower blow-down to treatment operations. Water that is returned to the host mill for reuse is not considered wastewater.

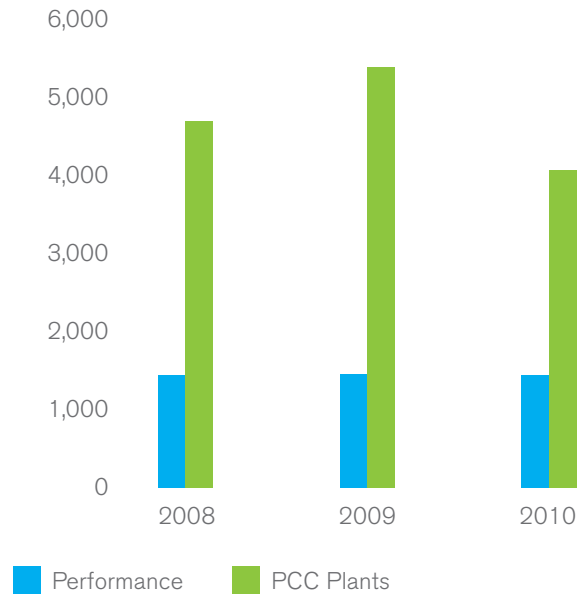
Figure 5 presents the amount of process and cooling water discharged by operations, in million gallons, for Performance Minerals and Paper PCC. The improvements in water efficiency shown above continue in the volume of discharges from MTI operations.

### Example of MTI's Sustainability Efforts: PCC R&D Evaluating Alternative Processes

Our scientists are investigating new processes to manufacture PCC that are more efficient and environmentally friendly. One example is the company's Filler-Fiber Composite material that would increase the amount of PCC filler in paper while reducing the amount of fiber, thus reducing environmental impacts.

FIGURE 5.  
Water Discharge  
(Million Gallons)

Note: MINTEQ discharges less than 10 million gallons of process wastewater per year.



## Air Emissions

Direct greenhouse gas emissions resulting from the combustion of fossil fuel have been calculated using the World Resources Institute (2008) GHG Protocol Tool for Stationary Combustion (Version 4.0). This Tool uses emission factors from the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and the amounts of fuel used to calculate direct emissions of carbon dioxide, methane and nitrous oxide (the three principal greenhouse gases resulting from fuel combustion). The Tool then converts the emissions of each of the gases into carbon dioxide equivalents (CO<sub>2</sub>e), which convert the emissions of each greenhouse gas into a common unit. The total tons of direct carbon dioxide equivalent emissions resulting from Minteq and Performance Minerals are presented in Figure 6. Note that this chart does not include mobile fuel usage at the Paper PCC and Minteq operations (forklifts, frontend loaders etc.). MTI has determined that the impacts of fuel used in non-quarry mobile equipment do not have a significant impact on the overall company emissions. It should also be noted that the Paper PCC facilities do not use fuel in any production operations; thus these locations are not included in Figure 6.

MTI has calculated the indirect greenhouse gas emissions resulting from the production of purchased electricity provided by public utilities. Indirect greenhouse gas emissions for the Performance Minerals and Minteq operations have been calculated using a calculation tool (Indirect CO<sub>2</sub> Emissions from the Consumption of

Purchased Electricity, Heat or Steam – Jan 2007 0 v 1.2) developed by the World Resources Institute and the World Business Council for Sustainable Development. The calculation worksheets were made publicly available at [www.ghgprotocol.org](http://www.ghgprotocol.org) by these two organizations in January 2007. This tool uses a variety of emission factors for specific regional or national electrical suppliers to calculate indirect greenhouse gas emissions. The tool then

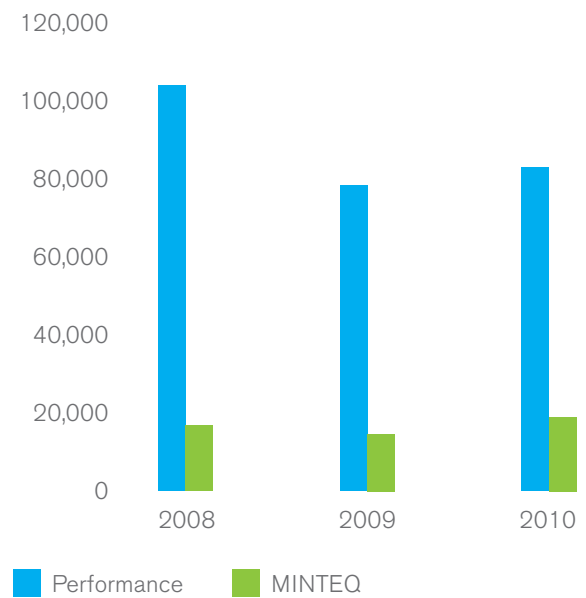
**FIGURE 6.**  
Total CO<sub>2</sub> Equivalent Emissions  
(Tons CO<sub>2</sub> Equivalents)

Note: PCC Plants do not produce greenhouse gases.



converts the emissions of each of the gases into carbon dioxide equivalents (CO<sub>2</sub>e). The total tons of indirect carbon dioxide equivalent emissions resulting from Minteq and Performance Minerals are presented in Figure 7. At this time, MTI does not have site-specific greenhouse gas emission factors from the Paper PCC host paper mills that supply these operations with electricity. Due to the fact that the paper mills often use co-generation systems rather than public electrical suppliers, the emission factors must be gathered on an individual site basis. This information will be obtained in the future from these suppliers so as to calculate the carbon footprint of indirect energy use for the entire company.

**FIGURE 7.**  
Indirect CO<sub>2</sub> Equivalent Emissions  
(Tons of CO<sub>2</sub> Equivalents)



None of our facilities use or emit significant amounts of refrigerants such as chlorofluorocarbons or any other greenhouse gases. Emissions of methane and nitrous oxide from fossil fuel combustion are included in the data presented in Figure 5.

The emissions of nitrogen oxides (NOx), sulfur dioxide, carbon monoxide and volatile organic hydrocarbons (VOCs) from Performance Minerals and Minteq have been calculated using total fuel usages and US EPA's AP 42 emission factors. Total emissions are provided in Figures 8 through 11. Only emissions from stationary combustion sources have been calculated.

As stated earlier, the Paper PCC process does not include any combustion or other fuel-using operations. Paper PCC plants do not generate new emissions, but rather use combustion gas from a host paper mill source (typically a lime kiln) as a raw material and then re-emit the existing emissions from the PCC plant stacks. The PCC process actually reduces the amount of sulfur dioxide contained in the combustion gas, but there is no data available to accurately calculate the amount of sulfur dioxide removed.

FIGURE 8.  
NOx Emissions  
(Tons of NOx)



FIGURE 9.  
Volatile Organic Compound Emissions  
(Tons VOC's)



FIGURE 10.  
Sulfur Dioxide Emissions  
(Tons of SO<sub>2</sub>)



FIGURE 11.  
Carbon Monoxide Emissions  
(Tons CO)



## Solid Waste

Many MTI locations keep records of the amount of process waste produced from the operations using a variety of means for calculating waste production. Where data is unavailable, the amount of waste is calculated using data from material balances or from similar operations. The amount of process waste produced by each Business Unit is provided in Figure 12. Note that the lower waste rates for Minteq are due to the lower volume of refractory production compared with the amount of material processed by both Performance Minerals and the Paper PCC plants.

MTI has limited the definition of wastes to include only process wastes that are sent to final treatment or disposal, either offsite or onsite. MTI is not including maintenance wastes (such as used oil), packaging wastes or office trash in this section, as there are no records of these materials. MTI also does not consider unprocessed mining materials that are returned to the mine site, to be process waste. These materials have not been chemically altered and are typically not regulated substances. Finally, we are not including materials that are recycled in offsite applications in the quantities of process wastes. The primary example of this is the alkaline screenings (“grit”) produced by several PCC plants, which is used as a replacement for agricultural limestone. Since this material is a product rather than a waste, it is excluded from the calculation of process waste volumes.

The various inorganic mineral process wastes produced by MTI facilities are, for the most part, inert materials and are not regulated as hazardous or dangerous materials by the regulatory agencies. Typical process wastes produced by MTI locations include the following:

- Alkaline screenings from the PCC process that are composed of calcium carbonate, calcium hydroxide and inert minerals;



- Waste limestone and talc materials from the mining and minerals operations;
- Wet calcium hydroxide and calcium carbonate solids from the settling operations at the two lime/PCC plants (Adams, MA and Lifford, UK); and
- Floor sweepings, discarded material and waste materials resulting from equipment clean out produced from the Minteq refractory sites. These wastes contain magnesium oxides, aluminum oxides, and other components of the monolithic refractory products.

Performance Minerals has reduced the amount of solid waste produced and increased the ratio of product to mined materials by focusing on the sale of byproducts and overburden rock. Improvements such as these provide environmental and economic benefits to the mines.

Many Paper PCC locations reuse the alkaline screenings, commonly referred to as grit. This material can be used either in agricultural applications as a substitute for agricultural lime, or in other applications where the alkalinity is beneficial. Options for grit use depend on local conditions such as the need for agricultural lime at nearby farms, the distance from the grit source to potential market, local regulations, the nature of the lime and the PCC grit and other factors. Figure 13 compares the amount of grit that is reused to that which is land filled.

FIGURE 12.  
Process Waste  
(Tons Process Waste Sent to Disposal)

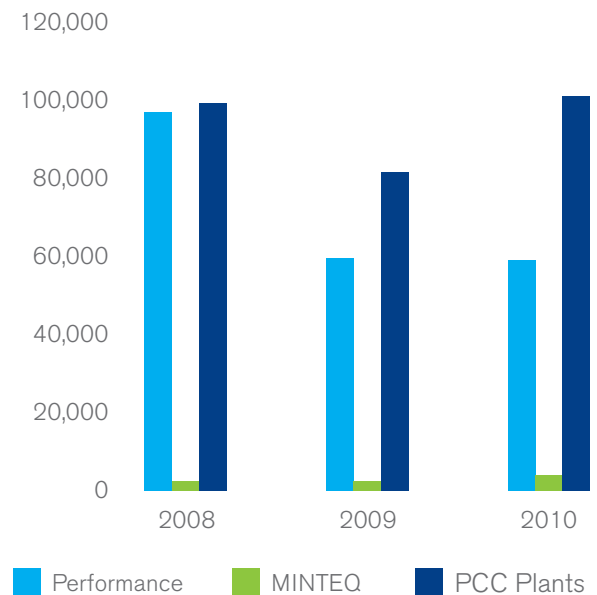
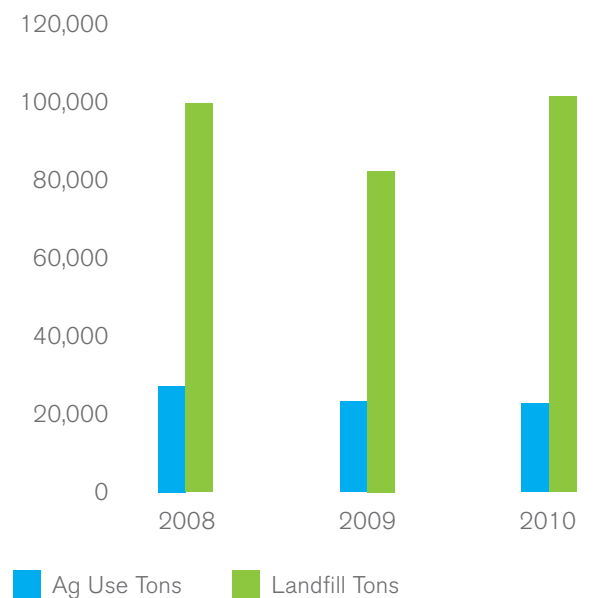


FIGURE 13.  
Satellite Process Waste Management  
(Dry Tons of Screenings (Grit))



## Environmental Incidents & Compliance

In 2007, the EHS Lead Team revised procedures to ensure that all environmental situations were properly reported. The revised procedures were designed to ensure consistent and prompt reporting of all situations that may have significant environmental impacts. Information on the number and impact of significant spills to the environment, presented in Table 1, is based on the information collected under these procedures.

The total number of environmental incidents and episodes (near misses) reported during this time is presented in Table 2. Note that environmental episodes were not consistently reported until late 2007; thus 2008 is the first year for which data is available. The EHS Lead Team reviews each environmental incident and episode on a monthly basis to identify trends and opportunities to prevent future situations and to ensure that appropriate investigations into the causes of the situation are conducted. This information is provided to all employees through company bulletins. Specific information about situations that may affect similar operations is passed directly to these sites to ensure that preventive measures are implemented.

**TABLE 1.**  
Significant Spills from MTI Locations

Year	# of Spills	Oil/Antifreeze	PCC Slurry	Other
2008	12	50 gallons/5 spills	2800 gallons/5 spills	50 gallons/2 spills from process waste haul truck
2009	8	<50 gallons/5 spills	None	Wastewater Release to soil (volume unknown); Alkaline release to treatment plant (300 gallons); Two acid releases to containment or treatment (estimated 1000 gallons)
2010	4	None	More than 10,000 gallons/ 3 spills	Less than 1000 pounds of dry calcium oxide during delivery operation

**TABLE 2.**  
Total Number of Reported Environmental Situations

Year	2008	2009	2010
Total Environmental Incidents	13	11	8
Total Environmental Episodes	24	23	22

## Example of MTI's Sustainability Efforts: MTI Presents Papers on Life Cycle Analysis of PCC

The worldwide Pulp and Paper industry, our largest market for our PCC products, is intently focused on Sustainability. As a supplier of a major raw material for that industry, MTI has engaged in public discussions to address some of the information needs on our products. MTI accepted an invitation by TAPPI (the American Paper Makers Association) in May 2008, to delegate Ludo Schyvinck, Director of Sales and Marketing for PCC, to take part in a panel discussion on Sustainability for suppliers of the Paper Industry. Other suppliers included DOW, BASF, and Imerys. At that occasion, MTI presented information on the Carbon Footprint of its products and processes. In December 2008, the German Industry Magazine IPW—a trade publication for the European paper industry—published an interview with Mr. Schyvinck on Sustainability.



## Minimizing Environmental Impact

MTI has always been sensitive to the environmental impacts of our activities at the operating facilities and the services and products provided to our customers. Two of the company's Value Statements exhibit this concern:

*We manage our operations, our capital, and our business opportunities in a sustainable manner.*

*We serve as good stewards of natural resources, and we employ sound environmental practices to protect the communities in which we operate.*

MTI continues to implement measures to minimize the environmental impacts of our operations, products and services. All of our mining operations have active reclamation programs underway. These operations also are reusing and marketing byproducts such as lime kiln dust and crusher fines to minimize the production of waste materials. We are also continuing local initiatives such as

the Mohave Desert Sustainability Project and the Bighorn Sheep Monitoring program (see separate story) at the California mine and community educational programs at the Massachusetts operation.

Non-mining activities and services are also the focus of efforts to identify and reduce environmental impacts. Many of our products offer significant environmental benefits to the customer. The Paper PCC plant concept, where precipitated calcium carbonate is produced at the customer site using existing utilities, avoids significant transportation impacts and reduces air pollution from the paper mill. Minteq's monolithic refractory products allow steel mills to extend the life of the steel furnaces, thus reducing wasted energy for frequent shutdowns and start-ups of the furnaces. Minteq's calcium and powdered wire products also allow the steel mill to better control the quality of the finished product with less wasted material.

MTI also has a number of ongoing initiatives designed to address specific environmental concerns. Specialty Minerals Inc. has developed



a calcium carbonate product (EMforce™ Bio additive) that is designed to improve the physical characteristics of new biopolymers that are being developed to replace petroleum-based plastics.

Both Minteq and Specialty Minerals Inc. are developing products and processes that use recycled materials to replace or supplement many of the minerals that form the basis of our products. Minteq is also replacing the coal-tar pitch used in certain refractory products produced in our Turkish operations with less toxic substitutes.

MTI has conducted a series of life cycle assessments for specific ground calcium carbonate and precipitated calcium carbonate products to support the sustainability efforts of our customers. The results of these studies have been published and presented at industrial seminars by company representatives.

All manufacturing operations have now implemented Lean Manufacturing systems, including Five-S, Standardized Work and TPM that allow our sites to more efficiently use all resources (raw materials, energy, labor and transportation, among others). These efforts are now extending into our support departments such as supply chain, human resources and others. As these programs take root within the company, we will continue to achieve further environmental improvements.

To date, the company has not developed detailed business or company-wide goals for specific environmental improvements. We recognize this as an area of opportunity.

## Penalties & Sanctions

During 2010, MTI facilities received two sanctions for noncompliance with environmental laws and regulations, both at our California mining facility. These sanctions were issued during a routine air inspection for issues that were quickly corrected. The facility paid a penalty of \$15,000 for these two violations and has since put into place programs that will prevent similar occurrences. The comparison of 2009 to the base period of 2006 – 2008 is provided in Table 3. All of these situations have been resolved successfully.

Starting with this report, the total number of safety sanctions and penalties has been added. The majority of these are citations and penalties assessed by the U. S. Mine Safety and Health Administration (MSHA) which has jurisdiction over the four U.S. mining operations (Adams, MA; Barretts, MT; Canaan, CT: and Lucerne Valley, CA). MSHA conducts multi-day inspections of each of the mining operations at least twice each year. Following the 2006 coal mine disaster in Sago, WV, MSHA increased both the level of scrutiny and the amount of penalties assessed. The substantial reductions in MSHA penalties from 2008 to 2010 reflect the dramatic improvements in safety at the mining operations resulting from the combined focus on safety and Lean.

**TABLE 3.**  
**Penalties and Sanctions**

Year	2008	2009	2010
Number of Environmental Sanctions	2	5	2
Environmental Penalties Assessed	\$4,688	\$320	\$15,000
Number of Safety Sanctions	109	127	68
Safety Penalties Assessed	\$78,736	\$39,393	\$10,609

## Social

### Labor Practices and Decent Work

Minerals Technologies, as of December 31, 2010, had 2,132 employees, of which 564 were professionals; 234 were in Administration; and 1,334 were direct labor.

All manufacturing, Research & Development and Steel Mill Service operations have active safety programs in place. These programs are administered by site safety committees that include both management and worker representation. The individual safety programs are based on Corporate Health and Safety Standards. Facility personnel complete self-assessments to ensure that site programs meet MTI standards. Site personnel also conduct routine site safety inspections, training, and emergency planning and reporting of all injuries and near misses. We have experienced significant improvements in plant working conditions as a result of the 5S program that is practiced by all of our business units. We are also identifying and addressing the risks present at our sites using our risk reduction and lean operating tools. As shown below, these programs have been highly effective in reducing the rates of injuries at our locations.

MTI has recorded safety statistics, including injury rates and lost days, since the company was formed in 1992. In 2007, the company's commitment to providing a safe workplace and safe products was given more emphasis with the adoption by management of a vision of zero injuries. As shown in Figures 14 and 15, this renewed focus on safety and improved work practices has resulted in breakthrough safety improvements.

Total Recordable Injuries include fatalities and any injury that requires medical treatment by a physician or other medical professional (including restricted work cases). Note that medical treatment does not include first aid. The Total Recordable

FIGURE 14.  
Recordable Injury Rate History  
(Recordable Injury Rate Injuries per 100 employee year)

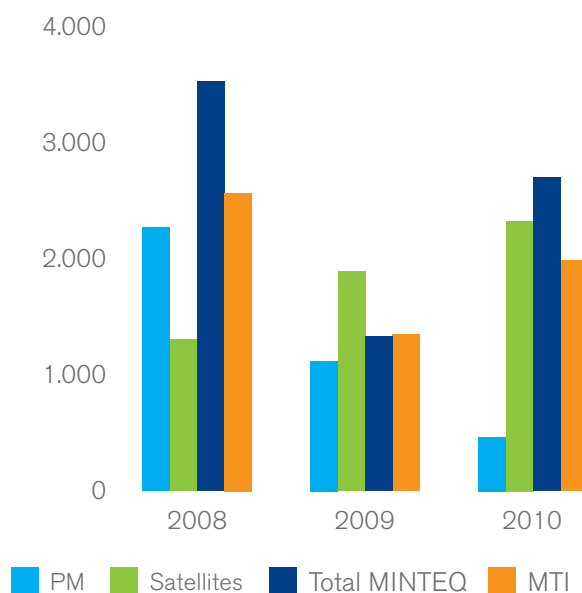
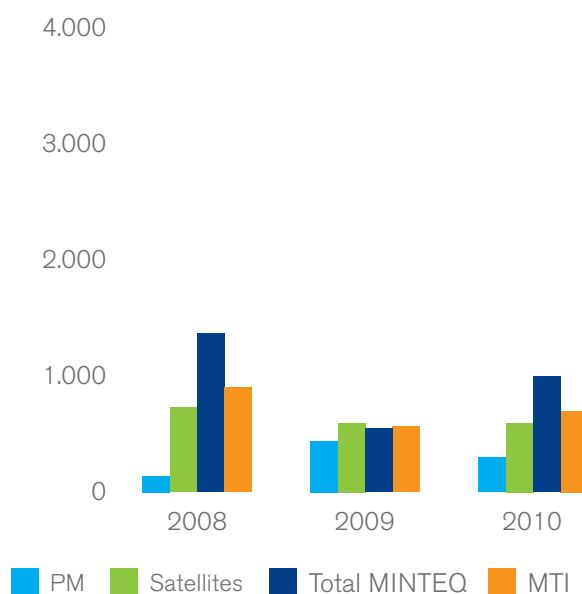


FIGURE 15.  
Lost Workday Injury Rate  
(Lost Workday Injury Rate Injuries per 100 employee year)



Injury Rate (TRIR) is a calculated statistic that describes the rate of lost time injuries, medical aids and restricted work cases per 100 full-time employees in one year, as shown in Figure 14.

A Lost Workday Injury is defined as any work-related injury that renders the injured person temporarily unable to perform any regular job or restricted work activity on any normally scheduled workday after the day on which the injury occurred.

The Total Lost Workday Injury Rate (LWIR) indicates the number of lost time injuries per 100 full-time employees in one year, as shown in Figure 15.

MTI has manufacturing and Steel Mill Service operations in 26 countries. Regional injury data for Asia, the Americas, and Europe (which includes operations in South Africa) is presented in Tables 4 and 5.

**TABLE 4.**  
 Recordable rate - injuries/100 employee-years

	2008	2009	2010
Americas	2.875	1.928	2.528
Europe	2.890	1.203	1.831
Asia	0.910	0.000	0.989
MTI Total	2.630	1.414	2.056

**TABLE 5.**  
 Lost workday rate - injuries/100 employee-years

	2008	2009	2010
Americas	0.511	0.671	0.506
Europe	2.023	0.859	1.331
Asia	0.607	0.000	0.659
MTI Total	0.939	0.613	0.748



## Human Rights

It is and has been the policy of Minerals Technologies Inc. to conduct our business activities in a lawful and ethical manner. As a “corporate citizen” of the countries in which we do business, we have a responsibility not only to obey the law, but also to promote high standards by conducting our affairs in a clearly ethical manner. MTI has corporate policies concerning legal and ethical behavior in various specific areas. These policies were established in the firm belief that it is both right and in the interests of the company, its employees, its shareholders, industry in general, consumers and the public, to act in accordance with them.

Integrity is, and must continue to be, the basis of all our corporate relationships. The corporate policies reflected in the booklet “Summary of Minerals Technologies Inc. Policies on Business Conduct” should be understood and followed by every employee who acts on behalf of MTI. The policies are designed to maintain and enhance MTI’s integrity and reputation as an outstanding corporate citizen.

Violation of these policies could, in many instances, subject the company and the individuals involved to criminal or civil actions, fines, and lawsuits for damages. On doubtful matters, employees must seek and receive advice in advance of taking action. Employees can obtain advice concerning these policies from the persons to whom they report, from the General Counsel of MTI, or from their designated representative. The company entered into a contract for on-line compliance training, and the MTI Code of Business Conduct is a part of the training. Employees are required to read it and then verify through the training software. There are modules on a variety of compliance topics—discrimination, Foreign Corrupt Practices Act, antitrust, etc.

In addition, Group/Division heads and all elected corporate officers are to annually attest to (1) personal compliance, (2) communication of the policies to all their employees, and (3) being unaware of any violations. Group/Division heads may ask other key individuals in their organization to sign similar statements.

The company has not recorded total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained. Nor has MTI identified operations that pose a significant risk for incidents of child labor, and measures taken to contribute to the elimination of child labor, forced or compulsory labor, and measures to contribute to the elimination of forced or compulsory labor.

## Society

As a matter of corporate policy, Minerals Technologies has a prohibition against unrecorded funds or assets; false or artificial entries in books or records; and misappropriation of assets of the company and its subsidiaries.

In addition, the company expects its employees to comply with the Foreign Corrupt Practices Act, which prohibits the making or offering of any payment to any foreign official to induce that official to affect any government act to assist the company in obtaining or retaining business.

The company has not analyzed its business units for risks related to corruption, but, as stated above, it is the responsibility of Group and Division heads and corporate officers to communicate these policies to all of their employees.

The company has had no actions, nor has it been fined, for any incident of corruption.





## Product Responsibility

### Workplace Safety

The first item addressed under MTI's Value Statements is:

**We place the health and safety of people ahead of all else.**

The safety of our workforce, visitors, customers and neighbors is the primary concern of MTI. Responsibility for health and safety is shared by all employees. In 2010, Management adopted a goal of becoming a world-class leader in safety by 2014, as evidenced by a lost workday injury rate of less than one injury per 1000 employee-years (a rate of less than 0.1). In order to achieve this goal, MTI has combined the benefits of a strong safety program with the improvements realized by the Lean initiatives to identify and reduce risks and promote safe work behaviors. MTI is using Lean and Safety as complimentary systems, such as combining 5S and safety audits, conducting joint Standard Work and Job Safety Analysis exercise and including a Residual Risk Reduction activity in every Kaizen event.

Risks associated with existing activities, processes and materials are also identified and controlled through fatality prevention assessments, residual risk reduction programs, job safety analyses and development of standard work practices. These initiatives help sites reduce the hazards of existing operations and allow new employees to perform their functions safely.

The focus on safety and improved work practices has resulted in breakthrough safety improvements. Everyone in MTI is committed to seeing these improvements continue in the future.

### Raw Material and Process Safety

MTI sites conduct a detailed environmental, health and safety review of all new chemicals proposed for use at the facility. In addition, new or modified processes or operations at new or existing locations are evaluated to identify potential during the design phase. As a result of these reviews, the sites are able to implement appropriate control and prevention measures to address potential concerns.

### Product Stewardship

MTI has long supported research efforts to evaluate the health and safety impacts of the minerals that form the basis of our industry. MTI continues to support the work of the North American Industrial Minerals Association and the American Chemical Council's Crystalline Silica Coalition to improve the basic science and understanding of the health effects of exposure to minerals, crystalline silica and similar materials which are found in all naturally occurring substances. MTI also supports efforts by these organizations and ASTM International to improve the analytical methods used to define and measure levels of crystalline silica and other substances in mineral products. Accurate measurement and identification methods are key to assisting health agencies and industry developed standards for safe levels of exposure to mineral products.



## Regulatory Approvals

MTI manufactures products for applications that require approvals from regulatory bodies for their use in direct and indirect contact applications. Specific precipitated calcium carbonate, ground calcium carbonate/limestone, and talc products are approved for applications in food, pharmaceuticals, nutritional supplements, medical devices, as well as in the manufacture of materials that come into contact with these consumer products.

Where applicable, MTI's products are strictly monitored for compliance to regulatory requirements, such as those of the U.S. Food and Drug Administration (FDA), United States Pharmacopeia (USP), European Pharmacopeia (EP), Japanese Pharmacopeia (JP), Clean Water Act, California Proposition 65, European Directives, Food Chemical Codex, CONEG Model Legislation (Heavy Metals), Chemical Inventory Lists, NAFTA, and many other regulations.

## REACH

As required under the December 2006 EU regulation known as REACH (Registration, Evaluation, Authorisation and Regulation of Chemicals), legal entities that manufacture in or import substances into the European Union (EU) must register these substances by specific deadlines.

In order to ensure compliance with REACH, each Business Unit has ensured that the suppliers of the raw materials used at European locations fully meet their obligations under the regulation. Each Business Unit has also registered all intermediate and final products as of December 1, 2010. Mineral products which are exempt from registration (Section 7 of Annex V) have not been registered. Both Specialty Minerals and MINTEQ have played leading roles in the registration of calcium carbonate and calcium metal, respectively. In this manner, MTI has assumed a key leadership role in ensuring that the customers and other downstream users of these products are fully aware of any environmental, health or safety concerns associated with the use of the products throughout the life cycle chain.



## Customers

MTI has in place a process for monitoring customer loyalty and overall satisfaction. This system is designed to listen to the voice of the customer and identify opportunities for improvement related to our products and services. The satisfaction surveys are designed to capture relevant information related to how MTI is meeting customer expectations, as well as gaining a better understanding of the customer's future needs. Through the effective analysis of the data received, our main goal is to identify value added solutions for our customers. Below are some key characteristics of our system:

- Customer surveys are issued electronically.
- Surveys are issued on a monthly basis.
- Surveys are issued to multiple contacts within a customer to ensure that the opinion of different functions is properly captured.
- The organization has established a performance goal of >75% (Scale 0-100).
- Account managers are directly responsible for follow up with customers.
- The survey results are evaluated on a quarterly basis and summary reports are reviewed with senior management



## Economic

MTI understands the importance of the economic value we provide for our shareholders, customers, employees and those communities in which we operate. In 2010, thanks to a dedicated work force, we were able to turn around our financial performance and record the highest earnings in company history.

Following are some highlights of our financial performance for 2010:

- Earnings per share of \$3.58
- Net income of \$66.9 million.
- Maintained 2008 and 2009 expenses in Sales & Marketing Administrative and R&D below 2006 levels.
- Debt to capital ratio of approximately 12 percent.
- The company paid out approximately \$3.7 million in dividends to shareholders in 2009.

### Financial implications and other risks and opportunities due to climate change.

A portion of the company's businesses are affected by regulations designed to combat Climate Change. Europe in particular has engaged in commitments under the Kyoto protocol to drastically reduce its greenhouse gas emissions. One of the instruments designed to reduce emissions is a Cap and Trade system called the ETS (Emission Trading Scheme for Carbon). Lime manufacturing (a major supplier of raw materials for MTI) and pulp and paper making (SMI's primary customer) are both regulated under this scheme which has been in place since 2005. The principle of that scheme is that installations receive a certain amount of rights (Allowances) for CO<sub>2</sub> emissions.

Depending on the amount of effectively emitted CO<sub>2</sub>, such an installation has to buy or can sell Allowances on a Trade Market. MTI monitors on an on-going basis to what extent changes in the European Regulations, reduction of allocated

allowances and the price of carbon on the market can have a financial impact on its business in Europe. Climate change regulations in the United States have until recently been limited to state and local authorities rather than at a federal level. In April 2009, the US EPA proposed regulations for reporting greenhouse gas emissions while a number of bills are being proposed in Congress designed to reduce emissions through a variety of programs. MTI is closely monitoring both the local and national activities for any impacts to our suppliers, customers or operations.

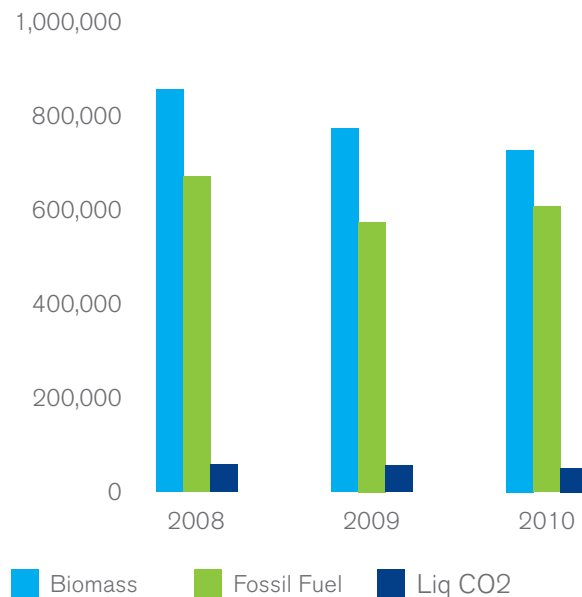
The paper industry is one of the markets that is especially affected by the ETS programs in place in the EU as well as the proposed emission reduction programs being discussed in the US. MTI's Paper PCC operations have a significant impact upon the carbon dioxide emissions produced by the host paper mills where the PCC plants are located. MTI has estimated the total amount of carbon dioxide removed from the paper mill emission sources (primarily the pulp mill lime kilns and recovery boilers) which is then converted to PCC. In order to estimate the amounts of biomass and fossil-fuel carbon dioxide that are converted to PCC, we have assumed that the one-third of the emissions from pulp mill lime kilns is fossil-fuel CO<sub>2</sub> while the remainder is biomass CO<sub>2</sub><sup>1</sup>. SMI has also assumed that all of the emissions from recovery boilers or other sources at paper mills that use wood process fuels are biomass emissions. Figure 16 illustrates the amount of carbon dioxide absorbed from biomass and fossil fuel sources, as well as the amount of liquid carbon dioxide used in the PCC process. This table is based upon production data and the sources of carbon dioxide at our host paper mills.

Under the ETS program, the amount of fossil-

<sup>1</sup> R. Miner & B. Upton, "Methods for Estimating Greenhouse Gas Emissions from Lime Kilns at Kraft Pulp Mills", ENERGY, Volume 28, August, 2002. Pages 729 – 738

fuel derived carbon dioxide removed by the PCC process can be deducted from the total emissions generated by the host paper mills. Thus, the PCC process has a significant benefit for our host mills and customers in terms of their GHG inventories. However, in order to keep this data in perspective, it is important to realize that the PCC process uses calcium oxide produced in lime kilns as the basis for the product. MTI has conducted life-cycle assessments to compare the carbon dioxide emissions resulting from the production of calcium oxide at the lime plants (including quarrying, calcination and transportation) to the carbon dioxide absorbed by the PCC process. These studies have indicated that the total carbon footprint of PCC (from quarry to final use in the paper machine) results in an emission of approximately 185 to 245 kg of CO<sub>2</sub> per 1000 dry kg of PCC product (depending upon grade of PCC and site specific factors). The impact of these emissions must be compared to the emissions produced during the manufacture of paper. Increasing the amount of PCC filler in a paper product (weight percentage) by replacing the fiber improves the carbon footprint of the paper product as less carbon is emitted (a factor of 7 to 15 times) by producing one ton of PCC compared to producing one ton of fiber<sup>2</sup>.

FIGURE 16.  
Total Carbon Dioxide Consumed  
by Satellite PCC Plants  
(Tons of Carbon Dioxide)



<sup>2</sup> L Schyvinck, "Sustainability – Market Impact on Materials," TAPPI/PIMA/Coating Conference (Dallas, TX), May 7, 2008

## Sustainability in the High Desert

MTI's facility at Lucerne Valley, California, sits amid the San Gabriel Mountains, where a herd of about 50 Nelson bighorn sheep graze company land. Committed to preserving the high desert's indigenous herds, which have been thinned by encroaching civilization and the concomitant shortage of water and suitable foraging/mate-finding habitat, the plant has been instrumental in working with the California Department of Fish & Game and the High Desert Bighorn Collaborative in helping to ensure the survival of the so-called Cushenbury Herd, which grazes the north slopes of the mountains. Says Doug Mayger, Vice President, Performance Minerals, MTI, "What's important here is the idea of working together to preserve habitat, whether that's the habitat of species of flowers, or the desert tortoise, or the bighorn sheep. Fish & Game is very focused on the sheep. The Bureau of Land Management is very interested in certain other land species. But ultimately when you look at the grand scheme, it's all related."

The Collaborative is itself an outgrowth of the Mojave Sustainability Project (MSP), which took shape formally in the fall of 2004, with the company as a founding partner. This ongoing tandem effort, along with some of MTI's corporate neighbors, pledges to recover some of California's most environmentally fragile vegetation and least arable terrain. Further, by partnering with Victor Valley Community College (VVC), which facilitates the activities of the Project, MTI is introducing a new generation to the sincere and effective cooperation that is possible between industrial and environmental interests. MSP's goals always

were more far-reaching than just meeting statutory requirements by restoring the land to 50 percent of its pre-mined condition. "The Mojave Project seeks meaningful long-term answers to questions about how you go about reclaiming these unique lands after mining usage," says Mayger. "What do you plant? What criteria do you set for the future? We're dealing with all kinds of flora and fauna."

The bighorns presented a golden opportunity to test that hypothesis. In the spring of 2005, MTI and VVC began developing a geographic information system (GIS) database of wildlife observations made by quarry employees. The program gave VVC students a chance to practice field collection of GPS data and to develop a scientific database from the ground up. (The work of all parties led directly to the creation of a Nelson Bighorn Atlas of the San Bernardino Mountains.)



In November of 2005, with the Mojave project closing out its first full year, 30 volunteers from the SCBS, VVC college students and faculty, and Lucerne Valley Boy Scout Troop 247 ventured out to help SMI repair its decaying Arctic Canyon water line and wildlife drinker. Working together over the course of six grueling hours, the team managed to unroll 4,000 feet of pipe and carry it up a steep canyon to bring dam water down to a 15,000-gallon water-storage tank. The improved water flow now allows the company to more easily meet its dust-suppression requirements, while also assuring that water is available for wildlife.

The more the various groups got out into the desert, and compared notes on what they found there, the more it became clear that preserving the small but important herd of Nelsons that foraged on the mountain would require a concerted, formalized plan. Hence, the Bighorn Collaborative, which drew together three mining operations, San Bernardino National Forest, Victor Valley College, and the SCBS, all working under the supervision of the California Department of Fish & Game.

In 2006, members of the Collaborative spent three days in Old Arctic Canyon, capturing eight Nelson bighorns in order to examine them for overall health and fit them with two transmitting collars. One collar uses GPS tracking to record the position of the animal at three-hour intervals. The second collar emits radio signals that, among other things, alert monitoring stations to the physical orientation of the animal's head. "If the activity sensor tells us that the sheep's head is down," says Mayger, "that plus the GPS will tell us whether it's foraging in our areas or not. That's valuable to know."

In time, the aggregated data and ongoing observations will more precisely answer questions about the degree of environmental impact to the bighorn population, which has been decimated since the 1900s, and to determine whether or not this herd is really in trouble. The Cushenbury herd is small and isolated from any other genetic contribution. But there is another group, the San



Gorgonio herd, and there is a corridor between the two. The objective is to determine the groups' roaming range.

The California Department of Fish & Game would like to see a doubling of sheep numbers. There may be suitable habitat along that corridor, where both populations of sheep could expand their current foraging and lambing range.

VVC students remain integral to the program. Since the very beginning of the Mojave project, students have been running experiments in the propagation of the four endemic species of flowering plants that occur on the mountain. Survival rates have run

as high as 80 percent, an enviable figure for the arid Mojave. The college conducts classes on-site, at the SMI plant, and even in the mines.

"This is really about the community," says Mayger. "We can't and shouldn't just run this as if it's our own little world out there and it comes down to whatever we have to do to make money, in the end. There are much bigger issues here. This is about proper stewardship of the land, just on principle. Rather than coming in and spraying some grass seed around, you want to take a more thoughtful, holistic approach to your responsibility to current and future generations."



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