MDS Sues AECL Over MAPLE Reactors

MDS Inc., a Canadian health care company that provides services to the global life sciences markets, announced on July 9 that it had served Atomic Energy of Canada Limited (AECL) with notice of arbitration proceedings as part of an effort to compel AECL to resume work on new nuclear reactors to produce medical isotopes. According to a press release issued by MDS, the company will be seeking an order to compel AECL to fulfill its contractual obligations under its 2006 interim and long-term supply agreement (ILTSA) and, if not granted, will seek significant monetary damages. MDS concurrently filed a court claim for CA$1.6 billion in damages against AECL for negligence and breach of contract and against the Government of Canada for inducing breach of contract and for interference with economic relations. The suit stems from an AECL decision earlier this year to discontinue the development of the MAPLE nuclear reactors for medical isotope production at AECL's Chalk River Laboratories in Ontario, after a series of government actions related to reactor safety at the facility.

"We have had to resort to taking these steps to protect the interests of patients, the nuclear medicine community, our shareholders and our customers," said Stephen P. DeFalco, president and CEO of MDS. "We are disappointed that AECL and the Government decided to abandon the MAPLE project without establishing a clear plan for the long-term supply of critical medical isotopes." MDS stated that its primary objective in the legal proceedings is to have AECL honor its long-standing commitment to replace the National Research Universal (NRU) reactor by bringing the MAPLE reactors into service and provide a 40-y supply of medical isotopes required by patients worldwide.

In 1996, MDS entered into an agreement with AECL for the design, development, and construction of 2 new nuclear reactors and a processing facility, known as the MAPLE project. The project was intended to replace AECL's NRU reactor, which produces approximately 50% of the world's medical isotopes. AECL agreed to provide an interim supply of medical isotopes from NRU until the MAPLE project was operational. The MAPLE project was to be completed by the year 2000 at a planned cost to MDS of CA$145 million.

By 2005, the project was not yet completed and costs had more than doubled, with MDS's investment exceeding $350 million. To address these issues, MDS entered mediation with AECL that resulted in a new agreement reached in 2006. The 2006 agreement stipulated that AECL would bring the MAPLE reactors into service commencing October 2008 and provide MDS with a 40-y supply of isotopes.

MDS noted in its press release on the arbitration and civil proceedings that the May 16 AECL and government of Canada announcement of discontinuation of the MAPLE project was made without prior notice to or consultation with MDS. AECL and the government also made their announcements without disclosing any long-term plan for the supply of isotopes beyond extending the license of the NRU. The release continued: "Prior to this announcement, in regular reviews with AECL to discuss the status of the MAPLE project, AECL had consistently maintained that it would complete the reactor project. AECL has stated that its decision will not impact the current supply of medical isotopes from the NRU, and the Government has stated that it would like AECL to pursue an extension of the NRU operation beyond its current license. While MDS supports this decision, it does not adequately address long-term supply."

In a responding press release, AECL stated that it believed it had "met and continues to meet its obligations under its agreements with MDS Nordion" and "will therefore vigorously defend both the arbitration and the civil action."

MDS Inc.

McAfee, Nuclear Medicine Pioneer, Dies

John G. McAfee, MD, a nuclear medicine pioneer whose groundbreaking research led to major medical advances across the spectrum of imaging practice, died on July 26 in Baltimore, MD. He cofounded the first nuclear medicine facility at Johns Hopkins Hospital in Baltimore in 1958. He was born in Toronto, Canada, in 1926 and received his medical degree in 1948 from the University of Toronto, with internships at the Victoria and Westminster Hospitals (London, Ontario). He completed radiology residencies at Victoria Hospital and at Johns Hopkins, where he also completed a fellowship. During his tenure at Hopkins, McAfee and the nuclear medicine group reported on numerous discoveries, including the use of radioactive mercury for kidney scanning in the 1950s and various applications of ^{99m}Tc in the 1960s. After his tenure at Johns Hopkins, McAfee spent 25 y at the State University of New York Health Science Center (Syracuse) as professor and chair of the Department of Radiology and Radiological Sciences. In 1990, he became a radiology professor at the George Washington University Medical Center (Washington, DC) and a nuclear medicine consultant to the National Institutes of Health (NIH) Clinical Center. From 1992 to 1995, he was chief of NIH's Radiopharmaceutical Research Section and consulted in the Clinical Section. His pioneering work was recognized with numerous honors and awards, including the gold medal of the Radiological Society of North America, the gold medal of SNM, and

SNM's Georg Charles de Hevesy Nuclear Medicine Pioneer and Paul C. Aebersold Awards. A complete In Memoriam will be published in the October issue of Newsline.

SNM

AAPM Holds 50th Meeting

The 50th meeting of the American Association of Physicists in Medicine (AAPM) was held in Houston, TX, from July 27 to 31. Thousands of scientists and health professionals from the field of medical physics gathered to celebrate a half-century of achievement and to present the latest technologies for imaging and treating diseases. In addition to these historical and scientific foci, participants also discussed current ethical and regulatory issues in the field.

"Traditionally our annual meeting is where scientists and clinicians working on the cutting edge of medical imaging and cancer therapy come to sharpen their knives," said AAPM President Gerald A. White, MS. "The organization was founded in the dawn of the atomic age, and each year our members build on that heritage to investigate and implement scientific and technological innovations that give definition to the medical care of the future."

One session at the meeting celebrated the role of women physicists in the organization throughout its history. Panelists discussed topics ranging from the past, present, and future of diagnostic imaging and radiation therapy, to the growing ranks of women in the field, to the emergence of nontraditional medical physics and novel methods for teaching physics. In 1958, when the organization was formed, 20 (15%) of its 133 members were women. In 2008, 1,297 (19%) of 7,894 members are women. "This ratio is much lower than in other countries. For example in the United Kingdom, approximately 50% of undergraduates pursuing medical physics are women," said Cari Borrás, DSc, women's coordinator of the Minority Recruitment Subcommittee of the AAPM. "This discrepancy between the United States and Europe suggests there's a great role for AAPM to play in women's medical physics education to open this important career field to more women."

Several of the featured scientific presentations highlighted by the AAPM in press releases focused on molecular imaging or molecular medicine techniques. Detailed descriptions, including abstracts, are available on the AAPM Web site at: www.aapm.org/meetings/08AM/VirtualPressRoom/meetinghighlights.asp.

American Association of Physicists in Medicine

FDA Final Regulation on Early-Stage Clinical Drug Development

The U.S. Food and Drug Administration (FDA) on July 18 issued a final regulation designed to make early phase 1 clinical drug development "safe and efficient by enabling a phased approach to complying with current good manufacturing practice (CGMP) statutes and FDA investigational requirements," according to an administration press release. To facilitate this new approach, the regulation exempts most phase 1 investigational drugs from the requirements in 21 *Code of Federal Regulations* (*CFR*) part 211. The FDA will continue to exercise oversight of the manufacture of these drugs under its general statutory CGMP authority and through review of investigational new drug (IND) applications. A companion guidance recommends an approach for complying with CGMP statutory requirements such as standards for the manufacturing facility and equipment, control of components, stability, packaging, labeling, distribution, and recordkeeping. "With this action, we are tailoring the CGMP requirements to make them appropriate to the earliest stages of drug development. This approach will ensure that these investigational products can be developed as efficiently as possible with the highest level of patient protection," said U.S. Health and Human Services Deputy Secretary Tevi Troy.

When FDA originally issued CGMP regulations for drug and biological products (21 *CFR* parts 210 and 211), the agency stated that the regulations applied to all types of pharmaceutical production but explained in a preamble that it was considering proposing regulations more appropriate for the manufacture of drugs used in investigational clinical trials. The reason for this consideration was that certain requirements in part 211 are directed at the commercial manufacture of products, such as repackaging and relabeling of drug products, rotation of stock, and maintaining separate facilities for manufacturing and packaging. These types of requirements may be inappropriate to the manufacture of investigational drugs used in phase 1 clinical trials, many of which are carried out in small-scale, academic environments, typically involving fewer than 80 subjects.

"The new rule and guidance are intended to assure that manufacturers meet high standards for the safety of phase 1 drugs and biologics while removing unnecessary barriers that can slow the development of these potentially life-saving products," said Rachel Behrman, MD, associate commissioner for clinical programs and director of FDA's Office of Critical Path Programs. The guidance, *CGMP for Phase 1 Investigational Drugs*, describes an approach manufacturers can use to implement manufacturing controls that are appropriate for the phase 1 clinical trial stage of development. Manufacturers will continue to submit detailed information about relevant aspects of the manufacturing process as part of the IND application. The FDA may inspect the manufacturing operation, suspend a clinical trial by placing it on "clinical hold," or terminate the IND if there is evidence of inadequate quality control procedures that would compromise the safety of an investigational product.

Guidance for Industry, CGMP for Phase 1, Investigational Drugs is available at www.fda.gov/cder/guidance/GMP%20Phase1IND61608.pdf. *Current Good Manufacturing Practice and Investigational New Drugs Intended for Use in Clinical Trials/Final Rule* is available at www.fda.gov/OHRMS/DOCKETS/98fr/oc07114.pdf

U.S. Food and Drug Administration

Smaller U.S. Hospitals to Invest in Imaging

According to a study released on July 24 by IMV Medical Information Division (Des Plaines, IL), U.S. hospitals with fewer than 200 beds are anticipating significant increases in spending for medical imaging equipment in 2009. "Capital budgets for diagnostic imaging equipment remained virtually flat between 2007 and 2008 in smaller U.S. hospitals," observed Mary C. Patton, director of market research at IMV. "But radiology administrators in these hospitals are generally bullish on capital spending plans for 2009. Many hospitals with aging diagnostic imaging equipment acknowledge that they cannot remain competitive if they continue to postpone investment in newer technologies."

IMV's new report, *Outlook for Investment in Diagnostic Imaging by US Hospitals, 2008–2009: The Radiology Administrator's Perspective*, provides specific insights about hospital radiology departments' near-term plans for capital investment in new and replacement imaging modalities and related capital purchases such as picture archive and communication systems. The study found that radiology departments in hospitals in the 100–199-bed range, which budgeted an average of $1.061 million per site in capital spending for 2008, have budgeted an average of $1.401 million per site for 2009, or an increase of more than 32%. Radiology departments in hospitals with fewer than 100 beds, which budgeted an average of $538,200 per site for 2008, are planning capital investments averaging $793,400 per site in 2009. MR imaging equipment stands out as the modality most likely to be purchased in 2009, followed by 16- and 64-slice CT scanners. Other modality acquisitions most likely to be considered high-priority purchases include digital mammography and ultrasound equipment.

Other highlights of the report include: 68% of surveyed radiology administrators consider recent reductions in Medicare reimbursement for imaging procedures as a "very major challenge" or "major challenge" to growing or maintaining imaging services revenues in their hospitals; recent imaging facility closures have had an effect on perceived competition for imaging services for 10% of hospital imaging departments in the survey sample; precertification requirements for diagnostic imaging procedures are most likely to have affected candidates for MR and CT scans, with some hospitals reporting 2–3-d delays as the norm for nonemergency diagnostic CT and MR imaging procedures; and more than two-thirds of the survey respondents reported they would be willing to purchase certified refurbished equipment for 1 or more leading diagnostic imaging modalities.

The report discusses specific strategies that hospital radiology departments are pursuing to introduce new technologies to generate new revenue sources and improve operational efficiencies. Radiology administrators' insights about expected changes in their local imaging services markets are also explored. Information about access to the report is available at www.imvinfo.com.

IMV Medical Information Division

CMS Points to Quality Reporting Payoffs

The Centers for Medicare & Medicaid (CMS) announced on July 15 the payment of more than $36 million in bonus payments to many of the more than 56,700 health professionals who satisfactorily reported quality information to Medicare under the 2007 Physician Quality Reporting Initiative (PQRI). "Creating a value-based purchasing system is a critical way to improve our health care systems. By collecting quality data, health care providers can use the information to improve the quality care of beneficiaries," said Health and Human Services Secretary Michael Leavitt. Physicians, physician group practices, and other PQRI-eligible professionals should have received their payments in August. The average incentive amount for individual professionals was more than $600, and the average incentive payment for a physician group practice was more than $4,700, with the largest payment to a physician group practice totaling more than $205,700.

"These payments to physicians for participating in the PQRI are a first step toward improving how Medicare pays for health care services," said CMS Acting Administrator Kerry Weems. "We all can agree that the current payment system needs to be reformed to pay for high-quality care rather than continuing to pay for the volume of services. The PQRI has proven to be a successful step towards establishing a value-based purchasing program for physicians."

Participation in PQRI is voluntary. In accordance with a law passed by Congress late in 2006, physicians and other eligible professionals received bonus payments of 1.5% of their total allowed Medicare charges, subject to a cap, by satisfactorily submitting quality information for services furnished between July and December of 2007. More than 109,000 professionals participated in 2007. Of those, more than 56,700 physicians and other eligible professionals met statutory requirements for satisfactory reporting for the 2007 reporting period and received incentive payments. The 2007 reporting period had participation from all 50 states, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam. Among all participating states and territories, health professionals in Florida and Illinois received the highest incentive payments, with more than $3 million and $2 million, respectively.

FDA press releases noted that the 2008 PQRI program includes significant enhancements in terms of the scope of measures that can be reported, the opportunity to receive incentive payments for the entire year, ability to report measures within a group for a specified number of patients, and the use of registries to report quality measures. All eligible professionals who participated in the 2007 PQRI can begin accessing confidential feedback reports that aggregate the data submitted and show comparisons among participants. Providers must register with the Individuals Authorized Access to CMS

Computer Services–Provider Community to access these reports.

The 2008 PQRI program has grown to include 119 quality measures published in the Physician Fee Schedule for 2008. Leading physician organizations participated in the development of the PQRI program measures. Almost all of the measures are clinical performance measures, such as the percentage of patients who receive necessary mammograms and cancer screenings. Two structural measures focus on the use of electronic health records and electronic prescribing technology.

As an alternative to submitting 2008 PQRI quality data as part of their Medicare claims submissions, eligible professionals may choose to report data on quality measures through a medical registry, and these registries will then report these data to CMS. Registry-based reporting provides another way for eligible professionals to qualify for an incentive payment. Participating eligible professionals who do not report through a registry may choose to report data on either individual measures or on groups of measures that capture a number of data elements about common care processes for diabetes, kidney disease, and preventive medicine. Registry-based reporting and reporting on groups of measures will provide more ways for eligible professionals to quality for an incentive payment.

More information about the PQRI program, including ways in which eligible professionals can participate and criteria to qualify for incentive payments, is available at www.cms.hhs.gov/PQRI.

Centers for Medicare & Medicaid Services

FDA Launches Fellowship Program

The U.S. Food and Drug Administration (FDA) announced on July 17 the launch of a 2-y fellowship program aimed at attracting scientists, engineers, and health professionals to the agency. The FDA Commissioner's Fellowship Program will provide participants with advanced training in the scientific analysis involved in safety and regulatory decisions. "Attracting the best scientists to FDA helps us make timely decisions and give doctors and patients helpful and accurate advice about treatment options. And timely decisions encourage more investment in developing new drugs and better medical devices," said Deputy Secretary of Health and Human Services Tevi D. Troy. "The FDA Commissioner's Fellowship Program will not only bring great fellows in the door, but encourage them to make FDA their career."

Applicants are being considered for the first entering class of the program, which will begin next month. The agency is seeking physicians, microbiologists, chemists, statisticians, pharmacists, biomedical engineers, nutritionists, veterinarians, and other science professionals. Applicants should have a doctoral degree in medicine or another scientific field; engineers must have at least a bachelor's degree. Between 30 and 40 applicants will be accepted for the first entering class. Although the deadline for this year's fellowships was on August 29, FDA staff urged eligible fellows and their mentors to plan ahead for next year's applications.

"The FDA is a science-based regulatory agency, and to fulfill our mission over the coming decade we will need to recruit thousands of highly skilled scientists and others with specialized and relevant expertise," said Frank M. Torti, MD, MPH, principal deputy commissioner and chief scientist. "The FDA Commissioner's Fellowship Program is designed to attract these people to the FDA and provide them with in-depth knowledge of the science that underpins regulatory decisions as we meet the challenges of both globalization and rapid changes in science and technology."

The fellowship program will include coursework and extensive hands-on experience in FDA regulatory science including regulatory review opportunities. More than 20 courses and seminars will be offered on topics including FDA law, ethics and decision making, biostatistics, clinical trial design, population science and epidemiology, risk assessment, international activities, budgeting and operations, leadership, and public policy. A full listing of courses is available at www.fda.gov/commissionersfellowships/default.htm. The courses will be taught at the agency's new, state-of-the-art campus at White Oak, MD, and at other facilities by senior FDA staff and faculty from universities in the region.

During the first semester, each fellow will identify an in-depth research project to be completed during the program, allowing each fellow to explore a specific area of interest under the guidance of a senior FDA scientist who will serve as a preceptor. Fellows will devote about 70% of their time to the scientific project and 30% to coursework.

More information about the FDA Commissioner's Fellowship Program and instructions for applicants are available at www.fda.gov/commissionersfellowships/program.html.

U.S. Food and Drug Administration

New EU Medical Device Rules

An article appearing on the Government Health IT Web Site on July 28 described elements of the revised European Union Medical Devices Directive scheduled to become law in 2010. For the first time, all stand-alone software designed for diagnostic or therapeutic purposes will be classified as medical devices and will need to secure the Conformité Européene, or CE Mark, before release in the European market. Imaging software and software used with handheld diagnostic devices (products that are designed to work with a range of systems), for example, must be certified and tracked as medical devices separate from the products with which they work.

Claire McKenna, medical device program manager at the National Standards Authority of Ireland, noted that to some degree software is already regulated as an integrated feature of many medical devices. "But now, if software can be used elsewhere or downloaded from the Internet and used by a physician for diagnostic purposes,

then it can be considered a medical device," she said. Another change is the requirement for clinical data to support vendors' claims for the performance and safety of their devices. This requirement will make it more difficult for vendors to get the CE Mark for their products, McKenna said. Sellers will have to more strongly support their claims, particularly for implantable and high-risk devices. The good news for software vendors, however, is that their products are not implantable and therefore will probably not be classified as high risk. The new regulations also require companies to establish a way to monitor their devices' use and performance in the field.

Government Health IT Web Site

Nuclear Forensics

On July 22, the International Atomic Energy Agency (IAEA) issued a press release describing the growing range of sophisticated "nuclear forensics" tools used by specialists to track and combat illicit nuclear trafficking and the threat of nuclear terrorism. Information in the release was based on reports presented at the Euroscience Open Forum 2008 held in Barcelona, Spain, the same week. "Illicit trafficking of nuclear and other radioactive materials and the threat of nuclear terrorism are reasons for serious concern," said Gabriele Tamborini of the European Commission's Joint Research Centre Institute for Transuranium Elements (JRC–ITU). He spoke at a conference session dedicated to the work of the world's "atomic detectives," a popular name for nuclear forensic specialists. "Nuclear forensics may provide information on the history, the intended use, and possibly on the origin of nuclear material. This scientific discipline is at the interface between physical science, prosecution, nonproliferation, and counter terrorism," said Tamborini. "We have moved from traditional safeguards—which took shape in the 1970s and were mainly made up of nuclear material accountancy and independent verification processes—to today's strengthened safeguards which also include the analysis of environmental samples."

Tamborini noted that the IAEA recently launched a development program for advanced sensing technologies, in which the JRC–ITU is participating. Diane Fischer, an IAEA senior safeguards analyst, addressed the tools used to detect undeclared nuclear activities, notably environmental sampling techniques. "Today we can say that environmental sampling is key to nuclear forensics," she said. The role of intelligence and international cooperation was also emphasized by the experts taking part in the panel. Nuclear forensics clearly benefits from reference data and cooperation. For example, the Nuclear Smuggling International Trafficking Working Group (ITWG) was formed in 1995 as an international body to address trafficking and proliferation risks after the collapse of the Soviet Union. "We aim to advance the science of nuclear forensics through international cooperation," said Klaus Mayer of JRC-ITU and ITWG.

International Atomic Energy Agency

^{131}I Therapy Sparks Airport Evacuation

Despite the best efforts of groups like the SNM and international agencies to spread the word about nuclear medicine procedures triggering security alarms, each month new incidents appear in the press. In late July, newspapers around the world carried the startling headline that a "radioactive Russian woman" had triggered the evacuation of an entire airport. During the week of July 21, a flight arriving at the Vladivostok International airport from Seoul, South Korea, triggered a radiation alarm, leading authorities to evacuate the facility. The alarm was called off when security officials pinpointed the source, a woman who had just received ^{131}I therapy from Korean physicians.

Interfax

Nuclear Medicine: In the Running in Australia

In considering thousands of stories from hundreds of sources for inclusion in Newsline each month, the editor's attention is occasionally drawn to stories in which nuclear medicine figures in unexpected ways. In late July, several Australian newspapers and online sources carried the news that the race horse Nuclear Medicine was set to run in the prestigious Salinger Stakes, a thoroughbred race held at Flemington Racecourse in Melbourne each November. Nuclear Medicine is trained by Gordon Yorke, who calls his charge "the people's horse," because, in addition to owner A.T. Ethell, MD, the 4-y-old brown gelding belongs to an online syndicate of more than 400 investors. The Salinger Stakes is an open handicap run over a distance of 1,200 meters, with AU$352,000 in prize money in 2007. The Newsline editor will follow the progress of Nuclear Medicine with interest.

Multiple Sources