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PUBLIC WORKS
DEPARTMENT

1985 10 18

Mr. Hans Kreplin
510 - 20 Northshore Blvd. W.,
Burlington, Ontario
L7T 1A1

Attention: Mr. Hans Kreplin

Dear Mr. Kreplin:

Re: Halton Landfill EPA Study/Comments
at the Special Solid Waste Management
Committee Meeting on July 15, 1985.

Firstly, I wish to thank you for your time and efforts in making your presentation to the special Halton SWMC meeting of July 15, 1985 regarding the selection of a new Halton Landfill Site. Part of your presentation dealt with Gartner Lee's 1984 Monitoring Report. I forwarded a copy of your presentation to them for comments. I thought you would be interested in their response and I've attached a copy of their comments for your information. //

I trust you will find Gartner Lee's response helpful. However, if you require clarification or have further comments please do not hesitate to contact myself (extension 315) or Dave Smith at extension 463.

Regards,

J.R. MacKay
J.R. MacKay, P. Eng.,
Manager, Waste Disposal

JRM/mm

Attach.

cc. D. Perlin, C.A.O.
D. Hodgson, Osler, Hoskin and Harcourt
R.C. Dickin, Gartner Lee Associates Ltd.
P. Walker, Walker, Wright Young Associates Ltd.

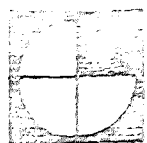
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September 18, 1985.

**Public Works
File Copy**

The Regional Municipality of Halton,
P.O. Box 7000,
2316 South Service Road West,
Oakville, Ontario.
L6S 6E1

Attention: Mr. J.R. MacKay, P.Eng.

Dear Sir:

Re: Burlington Landfill GLAL 85-61

We have prepared a written response to Mr. Kreplin's comments (July 15, 1985 SWM Committee), as requested in your letter of July 31, 1985. Copies of your letter and Mr. Kreplin's comments are attached for reference. Our responses are as follows:

- 9.1 The highest phenol concentration found in boreholes 13 and 16 in 1984 was 35 ppb at monitor 16-III. This concentration does not pose a threat to public health and safety. The plume delineation study (now underway) has been designed to assess this compound and other organics which may be migrating down gradient from the landfill. Therefore, it is premature to warrant any remedial action until the additional data are available.
- 9.2 Flow data from the toe-drain is important for assessing the effectiveness of the leachate collection system. We agree that the flow meter should be replaced and it is our understanding that the Region is currently looking into different types of replacement meters.
- 9.3 Borehole 17 was sealed in August, 1985 and replaced with Borehole 27 in early September, 1985.
- 9.4 A water balance or water budget for this site was presented in the "Hydrogeological Study for Continued Use Report, GLAL 83-66" of March, 1984. Water budget information was

previously presented in our "Monitoring Program Interim Report, GLAL 80-96-B", April 1981 and our "Hydrogeological Study (Expansion) Report, GLAL 78-92" of September 1979. A further, more detailed water balance approach will be taken when consistent, accurate data are available from the leachate flow meter discussed in 9.2 above.

- 9.5 The newly installed, stainless steel, deep monitors will be sampled in 1985 as part of the "plume delineation program" which involves trace organic testing. Only the older PVC plastic, deep monitors are being dropped from the monitoring program because routine water chemistry results over the last five years have been inconclusive.
- 9.6 Leachate breakouts are mapped by the Region and it is our understanding that this mapping is forwarded to the MOE annually. If the Region wishes, areas of leachate breakout could be presented in the 1985 monitoring report.
- 9.7 Seventeen new monitors were installed in September, 1985 to supplement the existing monitoring network and to replace damaged or destroyed wells.

We trust the above information meets your present purposes. Please contact our office if you have any questions.

Yours truly,

GARTNER LEE ASSOCIATES LIMITED



R.C. Dickin, M.Sc.
Senior Hydrogeologist

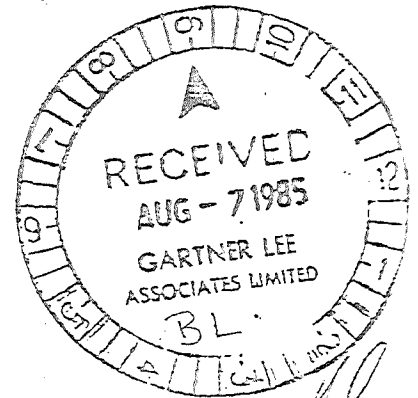
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1985 07 31

Gartner Lee Associates
Toronto Buttonville Airport
MARKHAM, Ontario
L3P 3J9

Attention: Mr. Bob Leech, P.Eng.

Dear Sir:

Re: Response to Hans Kreplin's Presentation
SWM Committee, Monday, July 15, 1985

Please find attached a copy of a presentation given by Mr. Hans Kreplin for the West-Burlington Citizens' Group to the Region's SWM Committee Meeting of Monday, July 15, 1985. In particular, we are requesting a written response to Mr. Kreplin's comments regarding the 1984 Landfill Monitoring Report as set out in Item #9 of his presentation.

We look forward to your reply.

Yours truly,

J.R. MacKay, P.Eng.
Manager of Waste Disposal

JRM:alc
Attachment

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COPY

From: Hans F. Kreplin P.Eng.
510-20 Northshore Bld. W.
Burlington, Ontario, L7T 1A1

To: Halton SWMC - July 15, 1985.

C.A.O. Report 203/85 p.5, numbered item (30) :

"F & D epitomizes some of the central issues".

- landfill on shale or on a till plain?
- does one of them require a liner, the other not?
- is one affordable and the other not?

Add to that the questions of required capacity, access to existing sources of pollution, the urban area, and so on.

The obvious answer is that site F is simply not suitable. The Region would throw good money and effort after bad by continuing with site F.

I suspect that most of Council and staff would now agree, but you and they hesitate to admit it publicly by eliminating site F. If that is really an issue, let me assure you that the public will have little respect for those who want to merely save face and will have greater respect for those who face the facts as they are. There is nothing wrong with changing direction for good reason, but there is plenty wrong with flogging a dead horse.

The time has come to get it right, and here are a number of other recommendations to do that. I should emphasize though, that I adopt a regional viewpoint rather (than) speaking parochially.

1. While site F should be dropped, site E should not be dropped at this time. To do so would leave Milton wide open to the OWMC, and the Region would be disloyal to one of its municipalities.

Site A could still be included, too, until a clearer view emerges from further studies which sites are least promising.

2. Plan on a transfer station for Halton Hills.
3. Start working more vigorously again on an EFW plant.
4. Plan on a separate landfill for EFW ash: The high concentration of compounds of heavy metals and the high leaching rate of these compounds make it necessary to capture and treat that highly toxic leachate at its source. Otherwise, the much larger volume of leachate from a general landfill would cause it to be diluted and make it much more difficult and expensive (if not impossible) to extract the toxic compounds. See the enclosed information from technical literature.
5. Do not delay or stop the current environmental assessment process if another interim disposal plan emerges. We have all put too much effort and money into taking the process this far to abandon it now that the end is in sight. The Region can not justify to repeat the process from square one again for itself and for all others affected, just because the process is arduous. I doubt the process can be simplified enough to make a later repeat less arduous than what remains now to stay the present course.

6. Although CAO Report 203/85 sets out to complete preparations for a hearing in minimum time, its recommendations have several flaws which could cause the plan to fail.
 - 6.1 The great number of separate consultants to be engaged makes their co-ordination difficult. the proposed control of the project by not only 1 but 2 staff committees, Direction Committee (ADC) and a Management Committee (AMC) is not only cumbersome, but there would be no one specifically responsible. For most effective co-ordination and direction there should be only one person in charge and first establish terms of reference.
 - 6.2 Hydrology Consultants did not produce acceptable work to date and should not be retained again for the larger scope of all the key subjects: Hydrogeology/geology/geochemistry/geophysics/shale resource analysis, plus participation in Operations and Design.
 - 6.3 No provision is made for further work on the social impact.
 - 6.4 Cultural impact is not included, as before. This relates to present culture as opposed to that of the past.
 - 6.5 The great number of consultants proposed in C.A.O 203/85 would make the scope for each rather narrow, but at the same time there is no provision for maintaining the larger perspective and generating an evaluation and overview. This should be an ongoing activity, if only for keeping Council informed in more than detailed technical terms.
 - 6.6 More use can be made of existing knowledge and expertise in studying the sites and/or special subjects, such as university departments and national or provincial institutions, whether governmental or not, e.g. the C.C.I.W. or Environment Canada could likely play a better role.
7. The Burlington Transfer Station will become incompatible with any afteruse of the present regional landfill site. This is a matter apart from finding a new site because the present site may well close before the startup of the new one.

Therefore plans should now be made to select a new transfer station, even though its use may or may not be temporary.
8. The certificate of approval for the present landfill site limits what waste can be accepted. EFW ash is not included, but according to a press report it is planned to ship ash from Ford Canada's EFW plant to the Burlington site, the Region will have to advise Ford Canada to that effect.
9. The landfill monitoring report for 1984:
 - 9.1 Significant increases in Phenols concentrations underground, downhill from the deposits are evident in boreholes #13 and 16. Counteraction will be required to arrest the further spread of Phenols.

- 3 -

- 9.2 The Region has failed to meter the flow of leachate from the collection drains during all of 1984. This amounts to serious neglect in monitoring the site. If that meter cannot be made to work, another ought to be installed. Based on the problems reported in previous years, two or three meters will be needed to obtain a reasonable continuity in these flow data.
- 9.3 #17 borehole is to be (or has already been) sealed. the location downhill from the landfill's centreline and closest to the North Service Road is particularly important to determine offsite leachate migration. This borehole should be left intact, or else a replacement must be installed. The report is silent on that question.
- 9.4 The monitoring report fails to calculate the landfill's water balance (i.e. what goes in and out). The Region's consultant should be asked to provide such elementary data.
- 9.5 The monitoring consultant proposes to eliminate sampling from deeper locations that have shown high chemical concentrations in the past. That is completely unacceptable. The reason given is merely a hypothesis, and the opinion that such analyses are useless is premature. The SWMC should instruct the consultant to provide the complete facts.
- 9.6 The monitoring report shows no data on leachate breakouts ("springs") through the cover. Since the Region is obliged to log the data, they should be reported as well, and the SWMC should request them.
- 9.7 A number of monitoring wells have been reported as damaged or destroyed. Their analyses have been or will be eliminated. The fact that the locations affected are among the most important ones for indicating the difference between uphill and downhill groundwater quality is possibly coincidence but is most unfortunate for the purpose of monitoring. Immediate repair or replacement of these boreholes is necessary for a meaningful continuation of the program, and the SWMC should take the appropriate steps.
- 9.8 The deficiencies listed above indicate a less than diligent execution of the monitoring program. The SWMC should act to not only obtain the missing information but ensure that the monitoring will be carried out fully in the future as well.

Signed: "Hans Kreplin"

Attch. Ford EFW/Certificate (3ps)
Ash - Pile Leaching (2ps)
POWER editorial (1 p.)

Final test burns get under way at Ford energy-from-waste unit

July 5, '85

OAKVILLE — The final test burns are under way at Ford Canada's energy-from-waste unit in Oakville.

The plant is designed to produce steam power by burning cardboard, packing crates, wooden pallets, up to 1 per cent metal, plastic and other waste.

It should be in full operation by August, said Ron Bright, director of environmental control and vehicle safety at Ford.

The \$3.7-million system will be the first at Ford's conventional auto plants in North America.

The two-stage burner system, which he described as "state of the art but very proven technology," will tie in with the plant's existing natural gas boilers to supplement the steam power they produce.

Temperatures in the unit would reach 982C (1,800F).

When fully operational, Mr. Bright said, the energy-from-waste (EFW) system should be able to provide 50 per cent of the summer power requirements at the Oakville plant. "In the winter our power load demand jumps drastically," he said, and the EFW plant can provide only a small share.

Test firings are under way now to cure the bricks in the burning chambers, he said. When the unit is in full operation it will be capable of burning 65 tonnes (72 tons) of waste a day.

Residue ash would be buried at the regional landfill site in Aldershot. The residue would weigh about half of what the original material did but the volume would be reduced by 85 per cent.

Mr. Bright said Ford embarked on the EFW project because it will be able to pay for itself within five years.

"We have high energy waste to burn," he said. "We will get twice the steam production you would expect municipal waste burning to produce."

The waste burning unit is expected to create as many as five full-time jobs at Ford, he said.

Ford had been considered by Halton region as a site for a municipal waste burning station but Ford decided to proceed on its own with a plant which burns only its waste materials.

Halton's plans for an EFW plant have now been put on hold because of public fears of toxic emissions and other pollution associated with the incinerators.

①



Environment

Ontario

PROVISIONAL CERTIFICATE OF APPROVAL WASTE DISPOSAL SITE

Under the Environmental Protection Act and the regulations and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

Regional Municipality of Halton
1151 Bronte Rd.
Oakville, Ontario
L6J 6E1

for the use and operation of a 29.3 hectare (72 acre) landfilling site with a total site area of 68.3 hectares (169 acres)

all in accordance with the following plans and specifications:

As per the attached Schedule "A"

Located: Part of Lots 3 & 4, Concessions 1 & 2
all the more particularly designated as Parts 1 to 9 inclusive
on Registered Plan of Survey 20R4648, City of Burlington
Regional Municipality of Halton

which includes the use of the site only for the disposal of the following categories of waste (NOTE: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval)
domestic, commercial and solid non-hazardous industrial wastes consisting of wastes from manufacturing and industrial processes and including demolition and construction wastes.

and subject to the following conditions:

- 2
1. An access to the site from the north is not to be constructed and only existing access from the North Service Road in the south is to be utilized.
 2. Liquid industrial and hazardous waste including pathological waste; industrial, chemical and sewage sludges; septic tank pumpings; radioactive waste and processed organic waste shall not be accepted for disposal at the landfill site.

THIS IS A TRUE COPY OF THE ORIGINAL CERTIFICATE MAIL

ON

Sept 24/84
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Dated this 20th day of September 1984

Director, Section 38
Environmental Protection Act

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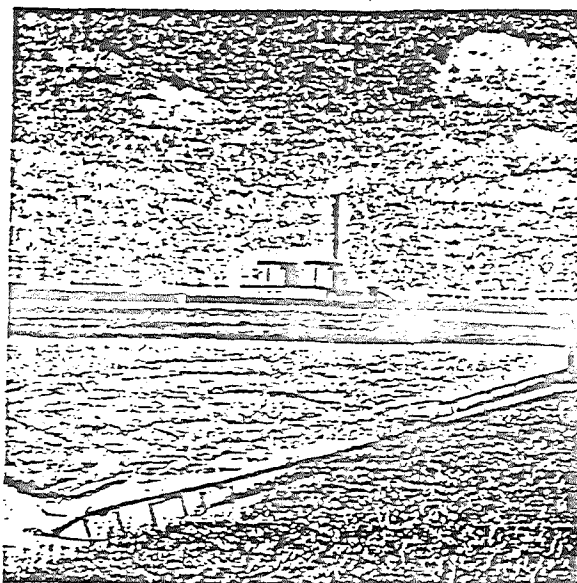
TO: Regional Municipality of Halton
1151 Bronte Road
Oakville, Ontario
L6J 6E1

You are hereby notified that Provisional Certificate of Approval No. A 210102 has been issued to you subject to the conditions outlined therein.

The reasons for the imposition of these conditions are as follows:

1. A reason for condition 1 is that the applicant has proposed the use of the existing 350 m access road to the site from the North Service Road; therefore this access road is to be used. It would not be in the public interest to construct a different road as the application has not been considered on this basis.
- ③ → 2. The reason for condition 2 is that the applicant has indicated in the application that these wastes would be specifically excluded from the site. The imposition of condition 2 is to prevent the disposal of any wastes at the site that were not specifically addressed as part of the application or part of the hearings. The practice of disposal of these wastes may result in a hazard to the health and safety of any person.
3. The reason for condition 3 is to ensure that a site groundwater and surface water monitoring program is submitted to the satisfaction of the Director to allow the Ministry to monitor the egress of contaminants from the site in the groundwater or surface water.
4. The reason for condition 4 is that a monitoring program is necessary to provide information on the degree to which leachate will be controlled by the installation and operation of toe drain and under drain leachate collection systems and to provide information on the degree of attenuation of the leachate that is taking place within the soil and its impact on the ground and surface water both off and on site. Also, the monitoring program is an integral part of the operating and development plan for the waste disposal site and it would not be in the public interest to have a landfill site approved without such a program being assured.
5. The reason for condition 5 is to ensure that there will be adequate environmental inspection of the site and that there will be a designated regional employee responsible for environmental inspection of the site and to ensure that this employee will understand his responsibilities in detail.

What is the best way to stop ash-pile leaching?



Our station is converting from an ash pond to dry-pile ash storage to cut water needs and possibly save money over the long run, with a chance for ash sale. We plan to excavate a small depth of soil to get a level area, and then to compact the ash before placing it in a flat plastic liner. On the liner will be more compacted ash, giving a flat upper surface for the stored material.

We also need some drain pipe in the under layers, but we are not sure whether to put in the pipe under the plastic, over it, or both under and over it in two separate drain systems. I am most concerned about the ability of the plastic sheet to survive, however, because I have no experience with a plastic swimming pool for which I couldn't adequately smooth out the ground and remove pebbles. Detection of leaching leaks is also something that we want to plan for.

What has been Power readers' experience with preparing the surface for plastic ash-pile liners? Should we screen ash or soil carefully for this? Are there precautions to take in installing the liner? Where should underdrain pipe be set? And, finally, how extensive should a detection-well system be to alert us to soil leaching?—RIH, March Power

Solutions

Run second, perimeter drain

Screening the soil or ash for the underlayer is necessary to prevent liner damage, but even then, the entire surface should get a thorough examination before compacting. The inspectors should look for stones, ash lumps, metal fragments, and so on that could later move upward and break through the liner. Once a break occurs, frost action and vehicle movement on the pile can extend the break and let considerable leachate through.

It might be a good idea to run a separate drain around the perimeter of the pile and connect it separately to the sump. Then if the underpile drains clogged up, at least the perimeter drain would be able to take off some of the leachate. The perimeter drain would be more accessible for digging out and clearing if it clogged up, too.

Don't forget the danger from vehicle movement, either. Contractors clearing out ash for sale have often damaged drainpiping and liners.

K M MALLISON, Atlanta, Ga

Slope liner toward drains

We have had experience with plastic liners in solar ponds and brine ponds at our desalting plant. People here are very concerned about contamination of the groundwater, so we have to be extremely careful. There is no clay layer close to the soil surface, and the possibility of leaching of salt into the groundwater made necessary an underdrain system connected to a sump for detection.

If RIH faces the same problem, he could clear off the

storage area and install an underdrain system of perforated 1½-in. PVC pipe in a grid pattern. Cover the pipe with at least 3 in. of a good grade of sand free of rocks and pebbles. Then place a good-quality plastic liner over the sand. Slope the liner to one corner or end, with a drainage system on one side running to a sump. Seal all joints in the liner and cover the bottom with 2 to 4 in. of screened flyash. The liner should be smooth and wrinkle-free.

The depth to the groundwater table determines the number of detection wells. A shallow depth means more wells, allowing faster detection of leaching. If the natural slope of the land produces a low point, put more wells there than upslope. Don't forget baseline records before filling the area with ash. Then compare future readings with the baseline. T W HAMMOND, Santa Nella, Calif

Don't put ash below the liner

Place the liner next to the excavated soil, not over compacted ash. If there were ash below the liner, the result might be environmental problems because of leaching. Although many liners today are made of Hypalon or polyethylene, some consist of a layer of bentonite clay.

The ash storage pile should have berm walls around the perimeter to help contain surface-water runoff. Carry the liner up into the berm wall, but do not store ash closer than 10 ft from the berm wall. The drains required to carry away surface water belong around the perimeter, within the berm wall. Drains that are below the ash

Your June problem

How can we evaluate contract-repair shops?

Our system had long taken pride in having as much maintenance and repair work as possible done on-site by station personnel or at a system-owned central repair facility that handled large or infrequently occurring breakdowns and modifications. Lately, the volume of work has expanded alarmingly, especially in connection with older units that we run so that we can postpone new site-finding and construction.

We now give work to outside firms. They repair equipment on-site or in their home shops. I am worried that we have no reliable way to judge the quality or per-dollar value of their work. We have a qualified bidders' list—a highly selective one, too, with some well-known companies either omitted or allowed to do only part of their specialties. In some of our work, however, bidding and fixed price are impossible. The bidders' list may be only a license to steal.

What experience have Power readers had with methods of evaluating repair work competitively and objectively? How do readers' plants take changed conditions of operation into account? What records are most cost-effective in the evaluation?—Bl

Sit down now and answer this month's problem. Answers will be published in our September issue—but we need them by July 15 to meet our deadline. We'll pay \$25 for each answer published, and extra for those printed with illustrations. If you don't have an answer, perhaps you know of some problem that Power readers might help you with. Give us the details, and we will try to put the question to our readers.

pile are prone to clog with ash and are a continual maintenance problem.

Construct a very-fine-mesh cloth fence between the ash pile and the perimeter drains. The fence helps prevent ash from clogging the drains during heavy rainfall. Chemical treatment to meet EPA standards is a must before discharging of any runoff collected by the perimeter drains. The treatment calls for a catch basin, chemical feeds, and mixers.

There are several other environmental problems that need attention when ash is to be stored in a dry-type pile. For example, RIH should place groundwater monitoring wells to various depths around the perimeter of the berm wall. Check the wells routinely for contaminants, including metals. Airborne flyash particles also require monitoring. Spray chemical binders on the ash pile daily to prevent airborne contamination.

D C KINNEAR, Baltimore, Md

Place drain above the plastic liner

Drains for fine material are always a problem because of a tendency to clog. Most installers of dry ash piles set the drain pipe above the blocking layer, whether the layer is plastic sheet or rolled earth. With proper care in installation, and also in operation, there should be no damage to the blocking layer. A drain system under the blocking

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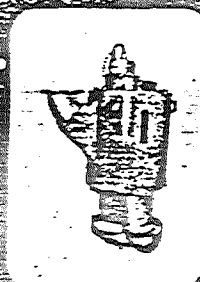
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There will be no spring cleanup in Greenlawn, Long Island, this year. This community's problem—one facing many other villages and towns throughout the US—is that it no longer has any acceptable method for disposing of the refuse. Existing landfills can't accommodate the spring surge and there are no incineration facilities to reduce its volume. So bulk residential wastes will remain in cellars, garages, and attics until the problem is solved. The solution undoubtedly will be the installation of a waste-fired steam generator which would produce steam, hot water, and chilled water for a nearby industrial plant or institution, and/or electricity for the local electric utility.

Waste-to-energy plants are a red-hot market today for manufacturers of all types of powerplant equipment. Last year, \$3.775-billion in financing was committed for the construction of 24 such plants—the most ever obligated in one year for these facilities, according to John Schopfer, vice president of Kidder Peabody & Co., New York City.

Alfred DelBello, president of Signal Environmental Systems Inc., a major supplier of large refuse-to-energy systems, says in a report published by *Engineering News-Record*—McGraw-Hill Inc.'s construction weekly—that 100 large-scale plants with capacities in excess of 1200 tons/day of refuse and 300 small-to-medium plants with capacities between 400 and 1200 tons/day will be needed by year 2000 to handle the waste flows. Timothy Bratton, senior vice president of Gershman, Brickner & Bratton, a Washington (DC) consulting firm specializing in refuse projects, supports DelBello's estimates. He recently told *Cogeneration Report*, McGraw-Hill's biweekly newsletter that in the next 10 years there will be opportunities for 130 large-scale projects (over 500 tons/day) and potentially two to three times as many smaller projects.

Waste-to-energy facilities cost more than conventional solid-fuel fired utility and industrial powerplants on an equivalent basis, because of the low-grade fuels they burn. Although prices vary with location and capacity, a rule of thumb is that plants handling more than about 1000 tons/day of refuse range from \$80,000 to \$100,000/ton capacity; smaller plants using standard components can cut design and construction costs to \$55,000 to \$65,000/ton. Large plants typically supply electricity to the grid, while small plants usually produce thermal energy for sale.

To learn more about this burgeoning market, plan on attending the first annual conference on *Energy from Municipal Wastes*, sponsored by POWER Magazine and McGraw-Hill's *SynFuels* newsletter. The intensive two-day meeting, devoted to the financial, tax, legal, environmental, and technical aspects of converting the energy in municipal refuse and sludge to a usable form, takes place **October 24-25** at **Washington's Shoreham Hotel**. Registration fee of \$695 includes a necessary meeting materials, a reception one evening, and a continental breakfast and group luncheon both days.

Four of the conference's seven sessions are concerned with the technology applied in refuse-fired plants. Topics include: refuse handling and preparation; materials-handling experience at mass-burn and RDF plants; sludge handling and precombustion treatment; mass-burn RDF, and fluidized-bed combustion systems—design and operating experience; boiler design, operation, and maintenance; gasification of refuse; cofiring of refuse and sludge; plant auxiliaries; cogeneration considerations; pollution control; ash handling, processing, and disposal. For a copy of the preliminary program and registration information write Linda Pergolizzi, POWER Magazine, 1221 Ave of the Americas, New York, NY 10020, or call 212-512-4725.