THE SOLID WASTE ASSOCIATION OF NORTH AMERICA, INC. (SWANA)

TECHNICAL POLICIES

Updated March 2020

SOLID WASTE ASSOCIATION OF NORTH AMERICA

Note: SWANA technical policies are developed with advice and comments from individuals who are knowledgeable and experienced in the field of solid waste management. Based on reliable information and best industry practices, the policies are reviewed periodically and revised as appropriate. Laws and regulations, which may vary from place to place, may affect the ability to fully implement the policies.

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SWANA TECHNICAL POLICY

DEFINITIONS OF TERMS USED
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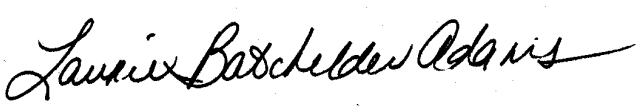
SWANA TECHNICAL POLICIES
AND
SOLID WASTE MANAGEMENT

This technical policy defines terms, acronyms and abbreviations frequently used in the solid waste management industry and in SWANA's technical policies (Attachment A). It also lists solid waste sources and types (Attachment B), organizations (Attachment C) and publications (Attachment D). Many of the definitions derive from US federal EPA definitions. States and Provinces have established their own statutory or regulatory definitions and those definitions should be consulted for legal drafting. This technical policy is intended to provide clear and consistent meaning for colloquy and for reading SWANA's technical policies, not precise technical definitions having legal implications.

SWANA members, staff and Technical Divisions may submit proposals to add, delete or amend these definitions to the Policy Committee at any time. The Policy Committee will consider the proposals no later than its next regularly scheduled annual or mid-year meeting, and may approve or disapprove proposals following review-and-comment by the Chief Executive Office and General Counsel. The Policy Committee may refer disputed proposals to the Executive Committee for guidance. Approved additions, deletions or amendments will be incorporated into appropriate Attachments to this policy.

Throughout this policy, defined terms contain initial capital letters.

Approved by the International Board on October 8, 2004.



Laurie Batchelder Adams, International Secretary

Dated October 8, 2004

ATTACHMENT A
SELECTED SOLID WASTE DEFINITIONS

ADC: Alternative Daily Cover. See "Cover".

Aerobic Decomposition: degradation of Organic Wastes in the *presence* of oxygen by microorganisms and bacteria, releasing carbon dioxide gas and heat and producing solid material (compost) that can be used as a soil amendment. An example of Aerobic Decomposition is the waste degradation that occurs in a compost pile. See "Composting". Contrast "Anaerobic Digestion".

Alternative Daily Cover (ADC): See "Cover".

Anaerobic Digestion: degradation of Organic Wastes in the *absence* of oxygen by microorganisms and bacteria, releasing methane that can be collected and used as a fuel and producing relatively inert solid materials that can be processed for use as a soil amendment. An example of Anaerobic Digestion is the waste degradation that occurs in a landfill. Contrast "Aerobic Decomposition".

Automated Collection: Solid Waste collection by mechanical means, where arms or other devices extend from the collection vehicle, grasp or otherwise manipulate containers, lift them overhead, tip them to empty solid waste into the vehicle, and set them back down on the ground. Fully Automated Collection requires no manual labor to grasp containers; semi-Automated Collection requires manual labor to position containers for mechanical grasping. Contrast "Manual Collection**".**

Beneficial Use: utilization or reuse of a material that would otherwise become Solid Waste. Examples include landfill cover, aggregate substitute, fuel substitute or the feedstock in a manufacturing process.

Biodegradable: describes waste materials capable of being biologically decomposed by microorganisms and bacteria. For example, Organic Wastes such as paper, wood, food and plants are biodegradable; metals, glass and most plastics are not.

Bioreactor Landfill: engineered landfill or landfill cell where liquid and gas are actively managed in order to accelerate or enhance Biostabilization of waste. Example management includes controlled addition and recirculation of water and capture of methane gas in a piping network.

Biostabilization: biological decay of Organic Wastes through process that reduces Leachate and Landfill Gas generation.

Bottle Bill: law that requires payment of a deposit on specified beverage containers (such as aluminum cans or glass beverage bottles) by consumers at time of purchase, and subsequent refund of the deposit by the product retailer or other entity when consumers return the containers for redemption. Bottle Bills encourage container recycling and discourage littering.

Buyback Center: facility that refunds deposits on containers subject to Bottle Bill redemption and/or purchases Recyclable Materials.

Buy Recycled: purchasing Recycled Products. Buy Recycled programs often emphasize purchase of products that contain a specified or maximum level of Post Consumer content and/or Recyclable Materials content without affecting the intended use of the product.

Capture Rate: ratio of quantity of Recyclable Materials diverted for Recovery, to the total quantity of Recyclable Materials available for Recovery. See "Diversion Rate" and "Participation Rate".

Carbone (*C&A Carbone Inc.* v. *Town of Clarkson* 511 U.S 383 (1994)): case in which the U.S. Supreme Court overturned a local ordinance that required all Solid Waste within the Town of Clarkstown be processed at a town-designated privately owned transfer station. The court found that the ordinance unconstitutionally discriminated against interstate commerce.

C&D Debris: See Attachment B: "Solid Waste Sources and Types".

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S. C Section 9601 *et seq*., referred to colloquially as "Superfund", providing for clean up and remediation of uncontrolled or abandoned Hazardous Waste sites and response to accidents, spills and other emergency releases of hazardous substances. CERCLA provides EPA with enforcement authority to ensure that responsible parties pay the cleanup costs. ("PRPs" are Potentially Responsible Parties.)

CESQG (pronounced SQUEEGY): Conditionally Exempt Small Quantity Generators, which are facilities that produce less than 100 kg. (220 lbs.) of Hazardous Waste (or less than 1 kg. of acutely Hazardous Waste) per calendar month. CESQGs are exempt from many of the requirements applicable to Hazardous Waste generators provided they comply with certain conditions specified in Subtitle C regulations.

Closure: cessation of operations at a Solid Waste Management facility (especially a Sanitary Landfill) and implementing plans promulgated in accordance with provisions of RCRA in order to ensure future protection of human health and the environment. An example closure requirement is providing specified grading and final cover of a Sanitary Landfill. See "Cover – final cover" and "Post Closure Care".

Commingled Recyclables: Recyclable Materials designated for Recycling either by (1) generators' placement with other Recyclable Materials mixed in a single, common container for collection, or (2) collectors' sorting and placement in a single, common compartment on the collection vehicle. See "Single Stream Recyclables". Contrast "Source Separated Recyclables".

Compaction Density: ratio of weight to unit volume of Solid Waste, Recyclables or other materials usually expressed as pounds per cubic yard or kilogram per cubic meter (lbs/y^3 or kg/m^3). Compaction is achieved in Sanitary Landfills, collection vehicles and storage containers by using Compactors. Greater Compaction Density increases the life of Sanitary Landfills, route length of collection vehicles or capacity of storage containers. Prescribed Compaction Density may be a performance standard in Solid Waste Management agreements. Compaction Density varies, depending on where and how it is measured. For example in a Sanitary Landfill, Compaction Density is affected by type of Cover, the initial moisture content of the waste, type of landfill Compactors used, number of passes by the landfill Compactors, where it is measured (e.g. on side slopes), etc.. Compaction in a Sanitary Landfill can be measured by multiple

means, including aerial surveys, GIS etc.. During collection, greater Compaction Density may be undesirable for certain Recyclable Materials such as glass.

Compactors: machines that reduce the volume of Solid Waste by crushing, compression or compaction. A **landfill Compactor** is a piece of heavy construction equipment with a blade (to push waste) and steel wheels with cleats (to minimize surface contact with waste and maximize pressure). It reduces volume of Solid Waste in a Sanitary Landfill by rolling over Solid Waste deposited on the surface of the Sanitary Landfill. A **Compactor collection truck** is equipped with a hydraulic ram and compactor plate that reduces volume by pushing and compressing wastes into the main body of the truck. **Stationary compactors** contain a ram that pushes and compresses waste into a container or bale.

Compost: the end product of Composting. It is a humus-like material that can be added to soils to increase soil fertility, aeration and nutrient retention.

Composting: biological decomposition or decay of Organic Wastes (sometimes including mixed Solid Waste) under controlled conditions. Composting takes place under aerobic conditions, typically in an open pile (called a windrow) or in a tank or container (called in-vessel composting). See "Aerobic Decomposition" and "Anaerobic Digestion":

Contamination: commingling of Garbage, Refuse or other material having unsuitable physical or chemical properties with Recyclable Materials or Organic Wastes, thereby rendering the Recyclables Materials or Organic Wastes unfit for further Reuse, requiring processing prior to Reuse, or decreasing their value for Reuse. A Recycling example is paper products sullied by food. A Composting example is Compost degraded by glass particles (a physical property) or heavy metals (a chemical property) present in the feedstock.

Corrective Action: action taken to investigate, describe, evaluate, correct and cleanup contamination from Solid Waste Management facilities as prescribed in accordance with law, including CERCLA and RCRA.

Cover (or Cap) (*noun*): soil or Alternative Daily Cover used to cover exposed Solid Waste in a Sanitary Landfill. **Alternative Daily Cover (ADC)** is Cover other than soil, such as spray slurries, tarps, foams, vegetative waste and ash. **Daily Cover** is Cover applied at the end of each Sanitary Landfill operating day. **Final cover** or **cap** is Cover comprised of layers of impermeable materials such as compacted clay, drainage materials, topsoil and vegetation applied over the top of a closed cell of a Sanitary Landfill to minimize the infiltration of rainwater and the production of Leachate.

Daily Cover: See "Cover".

Debris Boxes: See "Roll Off Boxes".

Dioxin: group of chemical compounds sharing certain similar physical structures and biological characteristics that can be emitted when burning Solid Waste if there is incomplete combustion and inadequate air pollution control devices. Studies have shown that exposure to Dioxin at high levels may adversely effect health. Federal air quality standards for Waste-to-Energy facilities establish very stringent emission limits for Dioxin.

Diversion: re-direction of Recyclable Materials from disposal through Resource Recovery.

Diversion Goals: Diversion Rates encouraged by law or policy, carrying no penalties, fines or other adverse consequences for non-achievement. Contrast ”Diversion Mandates”.

Diversion Mandates: Diversion Rates prescribed by law, carrying penalties, fines or other adverse consequences for non-achievement. Contrast “Diversion Mandates”.

Diversion Rate: ratio of the quantity of Recovered materials, to the sum of the quantity of Recovered materials plus the quantity of disposed materials. What materials are deemed Recovered or disposed may vary among different local, state, provincial and national governments. “Diversion Rate” is often referred to as “recycling rate” or “recycling diversion rate”. Compare “Capture Rate” and “Participation Rate”.

Drop-Off Center: containers such as bins and Roll Off Boxes placed at collection sites designated for deposit by generators of specified materials such as Recyclable Materials or Solid Waste.

EIS: Environmental Impact Statement, a document that identifies and analyzes in detail the environmental impacts of a proposed action, including in some instances, the construction of Solid Waste Management facilities, prepared in compliance with the National Environmental Policy Act or state and provincial laws.

Energy Recovery: includes (1) harnessing the heat from Solid Waste incineration or other thermal destruction process to produce steam for direct use or the generation of electricity; (2) extracting fuel from landfill gas, and (3) converting Solid Waste into liquid or gaseous fuels by chemical, thermal or biological processes.

Enterprise Fund: self-supporting method of funding Solid Waste Management programs and operations through revenues generated from service charges and fees, deposited and kept separate and distinct from local governments’ general funds.

Environmental Justice: fair distribution of environmental risks among all socioeconomic and racial groups. From a Solid Waste perspective, Environmental Justice concerns arise when Solid Waste Management facilities are, or are perceived to be, located predominantly in areas with minority or lower income populations.

Ergonomic Injuries: injuries to the musculoskeletal system resulting from repetitive motion, heavy lifting, forceful exertion, contact stress, vibration, awkward posture, rapid hand and wrist movement, etc.. Responsible Solid Waste Management operations implement training programs and workplace controls to reduce Ergonomic Injuries.

Financial Assurance: regulatory requirements designed to ensure that Solid Waste facility owners will have the financial resources to pay for Closure, Post Closure Care and Corrective Action, for example through dedicated trust funds, insurance or bonds, revenue pledges or meeting prescribed financial tests.

Flow Control: overt regulatory measure - usually in the form of a local governmental ordinance or official directive - mandating that Solid Waste, Recyclable Material or other material be transported to one or more designated Sanitary Landfills, transfer stations, Materials Recovery Facilities or other Solid Waste Management facilities. Flow Control has been significantly curtailed by *Carbone*. Some local governments have created financial incentives for haulers to bring wastes to particular facilities, and such methods (known as **economic flow control)** tend

to withstand legal challenges. Contrast “Flow Control” with “facility designation”, which is not regulatory in nature: for example where a service provider agrees, by contract, to transport or deliver waste or other material in accordance with the provisions of an agreement between the service provider and a governmental authority.

Franchise: right or privilege conferred by a local government on one or more private entities for the collection, transportation or other handling of Solid Waste or Recyclable Materials. A Franchise may extend throughout the corporate limits of the local government or may be limited to a specified area. Local power to grant Franchises typically stems from state or provincial law, municipal charter, or home rule authority. Franchisees may be required to secure licenses or permits in order to perform franchised services.

Front End Loaders: include (1) Solid Waste collection vehicles (a) originally designed to collect Commercial, Institutional and Industrial Solid Waste from large containers such as dumpsters, having 2 forks attached to the front that lift bins overhead and empty them into a hopper on top of the vehicle, and (b) adopted to collect Residential Solid Waste, for example, from cans dumped manually into buckets or hoppers attached to the front that lift the emptied Solid Waste overhead and empty it into the hopper (compare “Side Loaders”); and (2) heavy equipment with a bucket or grapple used to push or pickup materials in Solid Waste facilities.

Garbage: putrescible Solid Waste. Contrast “Refuse”.

Green Purchasing (or environmentally preferable purchasing): buying environmentally preferable products or services that have a less or reduced adverse effect on human health and the environment than competing products or services that serve the same purpose, considering life cycle impacts: raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance or disposal.

Groundwater Monitoring: sampling and analysis of water beneath the surface of the ground for the purpose of detecting the release of contamination from a Solid Waste Management facility.

Hazardous Waste Screening Protocol: procedures implemented in accordance with law or best industry practice to identify and remove Hazardous Waste from further handling within the Solid Waste Infrastructure, including during collection and upon delivery to transfer or disposal facilities.

Heavy Metals: trace metals present in Solid Waste that are sometimes found in the air emissions and ash from Solid Waste Combustors, Leachate, Compost or other products or residuals resulting from the processing of Solid Waste. Examples include mercury, cadmium, lead and chromium. Studies have shown that exposure to Heavy Metals at high levels may adversely effect health.

HDPE: High-Density Polyethylene, a plastic used to make a variety of products including milk jugs and landfill liners. HDPE containers are often identified by the number “2” inside the recycling arrows stamped on the container.

Incinerator: generic term for an enclosed unit that burns Solid Waste, sometimes without energy recovery. See also “Solid Waste Combustor**”** and “Waste-to-Energy”**.**

Inerts: materials such as concrete, fully cured asphalt paving, glass, plastics, fiberglass, asphalt or fiberglass roofing shingles, brick, slag, ceramics, plaster, clay and clay and clay products that do not degrade or putrefy and are not Hazardous Waste.

Integrated Solid Waste Management (ISWM): environmentally and economically sound, systematic approach to Solid Waste handling that combines Source Reduction, Reuse, Recycling, Composting, Energy Recovery, collection, transfer, transport and disposal in Sanitary Landfills, Solid Waste Combustors or other Solid Waste Disposal and processing facilities in order to conserve and recover resources and dispose of Solid Waste in a manner that protects human health and the environment.

Intermediate Processing Center (IPC): term used interchangeably with "MRF", or to signify MRF that not only sorts and recovers Single Stream and Commingled Recyclables (usually from residential and commercial sources) but additionally processes them into new Recycled Materials feedstock or Recycled Products. See "MRF".

Interstate Commerce Clause: provision of the United States Constitution prohibiting state and local governments from discriminating against interstate commerce *unless* they are acting as market participants like private parties. See "*Carbone"* and "Flow Control".

ISWM: See "Integrated Solid Waste Management".

Landfill Gas: gas produced when Organic Waste naturally decomposes in a Sanitary Landfill, comprised of approximately 50 percent methane (the primary component of natural gas) and 50 percent carbon dioxide. Landfill gas can be collected and used as a fuel for heating, generating electricity or fueling engines.

Leachate: liquid that has percolated through or drained from Solid Waste, often containing suspended or dissolved waste materials.

Liner: layer of natural or synthetic material laid beneath and on the sides of a Sanitary Landfill that restricts the downward or lateral escape of Leachate and Landfill Gas. **Clay liners** can be constructed from tightly compacted clay soils or manufactured geosynthetic clay. **Synthetic liners** (sometimes called flexible membrane liners or FML) are constructed from plastic membranes (geomembranes). **Composite liners** combine layers of both clay and synthetic liners. State, provincial and national law may prescribe minimum specifications for liner systems.

Managed Competition: process where municipal or public sector Solid Waste departments submit proposals or bids in competition with private sector Solid Waste companies in response to a publicly tendered service contract. Managed competition could be applied to any Solid Waste service (or any other municipal service) but generally has been applied to Solid Waste collection services.

Manual Collection: Solid Waste collection by hand rather than machine, where workers grasp, lift and empty cans or toss bags into hoppers or buckets on a collection vehicle. Contrast "Automated Collection**".**

Materials Recovery Facility (MRF): building where Commingled Recyclables are separated and processed (including sorting, baling and crushing) or where Source Separated Recyclables are processed for sale to various markets. See "Intermediate Processing Center". In a **Dirty**

MRF the incoming Recyclable Materials are co-collected and commingled with other non-Recyclable portions of Solid Waste. See "Mixed Waste Processing".

Mixed Waste Processing: picking, sorting and otherwise separating Recyclable Materials from commingled Refuse and Garbage, as opposed to picking, sorting and otherwise separating one type of Commingled Recyclables (such as fiber) that was separated and collected separately from Solid Waste from another type of Commingled Recyclable (such as containers). See "MRF".

MOLO: Manager of Landfill Operations, one of SWANA's certification disciplines. See "SWANA Certified"**.**

MRF (pronounced MURF**):** See **"**Materials Recovery Facility".

MSW: municipal Solid Waste. See Attachment B "Solid Waste Sources and Types."

NIMBY (Not In My Backyard): neighborhood, community or local political opposition to the siting and development of Solid Waste Management facilities.

Participation Rate: ratio of generators (e.g. individuals, households or businesses) of Recyclables Materials that actually participate in a Recycling Program by setting out Recyclables for collection during a prescribed period of time, to generators who are served by the Recycling Program and could participate in the Recycling Program. See "Capture Rate" and: "Diversion Rate".

PAYT (Pay As You Throw): See "Variable Rates".

PET (Polyethylene Terephthalate): plastic commonly used to make containers such as soft drink bottles. PET containers are often identified by the number "1" inside the recycling arrows stamped on the container.

Post Closure Care: activities during the period after Closure of a Solid Waste Disposal facility where the facility owner is required to carry out monitoring, maintenance and any necessary Corrective Action needed to contain liquid, gas and Solid Waste and to detect, prevent or respond to the release of liquid, gas and Solid Waste.

Post Consumer: describes products purchased and used by consumers, then discarded or recycled, such as a newspaper that has been purchased and read, Recycled, then used to make newsprint. Contrast "Pre Consumer".

Pre Consumer: describes feedstock used in manufacturing, fabrication or industrial production, then discarded or recycled, comprised of scrap, trimmings, cuttings and other post-production discards such as overruns, over issue publications, and obsolete inventories. Contrast "Post Consumer".

Privatization: use of the private sector to provide Solid Waste Management services, ranging from complete private ownership and operation of ISWM facilities, service contracts or Franchise agreements between local governments and private parties to provide ISWM services, to private operation of ISWM facilities or equipment owned by the public sector.

Procurement Preference: purchase of Recycled Products even though their price exceeds the price of similar products with lesser or no Recycled Materials content, often by creating exceptions to procurement laws or practices that require purchasing qualifying products having the lowest cost.

Products of Combustion: gases and particulates that result from the combustion of Solid Waste.

Product Stewardship: appeal to all parties in a product life cycle - manufacturers, retailers, users and waste managers - to share responsibility and costs for reducing the adverse environmental impacts of products. From a Solid Waste Management perspective, Product Stewardship involves the actions taken to improve the design and manufacture of products to facilitate either their reuse, recycling or disposal, as well as actions to establish programs to collect, process and Reuse or Recycle products when they are discarded.

Pyrolysis: thermal and chemical decomposition of Organic Waste in a furnace operated without sufficient oxygen to allow combustion. Pyrolitic products include combustible gases, oils, charcoal and mineral matter. Contrast "Incineration".

Rail Haul: transportation of Solid Waste (generally long distances) by railroad.

Recovery: (or Recovering): See "Resource Recovery".

RCRA (pronounced RECK RAA): Resource Conservation and Recovery Act, 42 S.S. C. Section 6901 *et. seq.*, as amended, the major U.S. federal legislation first adopted in 1976 that governs the management of Solid Waste and Hazardous Waste in the U.S.

Recyclables Broker: individual or entity that acts as agent or intermediary between the sellers and buyers of Recyclable Materials such as metals, paper and glass.

Recyclable Material: substance that can potentially be reused as or recycled into a Recycled Material or Recycled Product. See also "Recycled Material" and "Recycled Product".

Recyclables: See "Recyclable Material".

Recycled Content: portion of a product's or package's weight that is composed of materials re-manufactured from a Recyclable Product or packaging material, including Pre-Consumer Materials or Post-Consumer Materials.

Recycled Material: Recyclable Material that has been converted into feedstock for use in the manufacture of a new Recycled Product, including containers or packaging. See also "Recyclable Material" and "Recycled Product".

Recycled Products: includes (1) products having specified percentages of their total weight comprised of Pre-Consumer or Post Consumer Recycled Material and/or secondary materials (such as certain paper products, plastic products, aluminum containers, Compost and co-compost, glass products, lubricating oils, paints and solvents); (2) used products that are not disposed but refurbished for Reuse without substantial alteration (such as refilling beverage bottles returned to a bottler, dock bumpers made of scrap tires, remanufactured laser toner cartridges, repaired office furniture, reconditioned carpet, retreaded tires, and reformatted computer disks).

Recycled or **Recycling:** includes (1) collection, sorting, marketing, processing, and transforming or remanufacturing Recyclable Materials into Recycled Materials and Recycled Products, including marketing thereof; and (2) the purchase and use of Recycled Products. See "Recyclable Materials", "Recycled Materials" and "Recycled Products".

Redemption: return of Recyclable Materials such as beverage containers covered by Bottle Bills to the retailer thereof or a Buy Back Center for refund of amounts at least equal to the deposit, made at the time of sale.

Refuse: non-putrescible Solid Waste. Contrast "Garbage".

Remanufacture: disassembling used products that have been recovered instead of discarded, including cleaning, repairing or replacing necessary parts, and reassembling them for resale and reuse. "Remanufacture" often involves breaking down a used product into its main / core subsystems / modules and adding extensive parts and labor. "Remanufacture" may be distinguished from "**refurbishing**", which is less extensive, including renovating, repairing, restoring, or generally improving the appearance, performance, quality, functionality, or value of the used product for reuse or resale.

Request for Bids (RFBs. tender): procurement in which a local government solicits price bids for goods or services (such as Solid Waste collection and disposal, Recycling, or facility development or operation) based on prescribed, detailed specifications, usually with limited authority to negotiate or modify bids unless bidder does not meet minimum qualifications. The form, manner and timing of requests for bids are mandated by law. Once bidders meet minimum qualifications (such as experience), price is the only criteria. Contrast "Requests for Proposals (RFPs)".

Request for Proposals (RFPs): procurement in which a local government solicits price and/or program proposals for goods or services (such as Solid Waste collection and disposal, Recycling, or facility development or operation) based on prescribed but possibly alternative and general specifications, usually with broad authority to negotiate or modify proposals. The form, manner and timing of requests for proposals are subject to the local government's discretion. Not only price, but additional factors such as proposed program, experience, references, environmental record, history of litigation, recycling achievements, etc., may be criteria. Contrast "Requests for Bids (RFBs)".

Request for Qualifications (RFQs): in advance of issuing Requests for Proposals, local governments solicit qualifications of potential proposers. Contrast "Requests for Proposals (RFPs)".

Resource Recovery: recovery rather than disposal of Recyclable Materials or energy from Solid Waste, encompassing Recycling, Reuse, Composting and Energy Recovery.

Reuse: use of a product more than once in its same form for the same or different purpose without substantial alteration. See "Recycled Product".

RFP: See "Request for Proposals".

RFQ: See "Request for Qualifications".

Roll Off: open-topped rectangular containers for storage, collection and transport of Solid Waste that are rolled on and off flatbed collection vehicles via winches or reeving cylinders (hooks), originally servicing Commercial, Institutional and Industrial Solid Waste but increasingly servicing Drop-Off Centers for Residential Solid Waste or Recyclables or sites that generate C&D Debris. See also "Debris Boxes".

Route Efficiency: measurements of efficiency or productivity of a collection vehicle from the time it leaves the maintenance yard until it returns from collecting Solid Waste or Recyclable Materials and delivering them to Solid Waste Management facilities. Efficiency may be measured in various ways, including stops / route, time / route, cycling time, time between stops, etc.

Route-Selected Recyclables: Recyclables collected by a hauler with scheduled stops structured to minimize contamination of Recyclables by Garbage, Refuse or other unacceptable materials and maximize Resource Recovery, such as excluding restaurant and grocery stores from routes that collect paper from office buildings.

Sanitary Landfill: engineered Solid Waste disposal method on the land in accordance with Subtitle D, designed and operated to protect human health and the environment by establishing requirements with respect to location, operation, design, ground water monitoring, corrective action, closure and post-closure, and financial assurance.

Scavenging: (1) theft of Recyclable Materials set out by the generators, prior to collection by the hauler, done by individuals or illicit businesses, and (2) uncontrolled (and generally unsafe) removal of Recyclable Materials from the working areas of a Sanitary Landfill, Transfer Station, MRF or other Solid Waste Management Facility.

Side Loaders: collection vehicles that are loaded from the side manually or with fully or semi-automated mechanical arms that grip containers (primarily small residential carts), lift them overhead, and empty them into the collection vehicle. Compare "Front End Loaders".

Single Stream Recycling: See "Commingled Recycling".

Small Quantity Generator (pronounced SQEEGY): facilities that generate very small quantities of Hazardous Waste, between 100 kg. (220 lbs.) and 1000 kg. (2,200 lbs.) per calendar month. The regulatory requirements for Small Quantity Generators are less stringent than persons who, or entities that, generate larger quantities of Hazardous Waste.

Solid Waste: any Garbage, Refuse, sludge, and other discarded material, including solid, liquid, semisolid, or contained gaseous material, resulting from residential habitation; industrial, commercial, mining, and agricultural operations; and community activities. This definition may vary under diverse local, state, provincial and national laws. See also Attachment B "Solid Waste Sources and Types".

Solid Waste Combustor: furnace that combusts Solid Waste as defined in regulations promulgated under the US Clean Air Act. Solid Waste Combustors are subject to stringent federal regulations that control the combustion process and establish emission limits for various air pollutants including Dioxin, Heavy Metals, acid gases (hydrogen chloride and sulfur dioxide), particulates and nitrogen oxides.

Solid Waste Combustor Ash: noncombustible residue remaining after the combustion of Solid Waste. **Bottom ash** is the noncombustible residue that falls to the bottom of the combustion chamber and is removed mechanically. **Fly ash** is particles of noncombustible residue that are entrained in the exhaust gases during combustion prior to exhaust into the atmosphere.

Solid Waste Disposal: the discharge, deposit, injection, dumping, spilling, leaking or placing of Solid Waste on or in the land or water. This definition may vary under diverse local, state, provincial and national laws.

Solid Waste Infrastructure: facilities, furnishings, equipment, systems and programs developed to provide Solid Waste services, including privately or publicly owned or operated collection fleets, transfer stations, MRFs, composting facilities, Sanitary Landfills, Solid Waste Combustors and other Solid Waste Disposal facilities, or operation or service contracts therefor.

Solid Waste Management: planned and organized handling of Solid Waste and Recyclable Materials in an environmentally and economically sound manner, encompassing the generation, storage, collection, transfer, transportation, processing, Resource Recovery, Reuse, and disposal of Solid Waste and Recyclable Materials and including all administrative, financial, educational, environmental, legal, planning, marketing and operational aspects thereof.

Source Reduction (or Waste Reduction)**:** actions taken to reduce Solid Waste toxicity or disposal, including (1) manufacturers' redesign and management of products and packaging to extend product life, and facilitating repair, (2) consumers' reduced purchase and consumption of products that become wastes; and (3) manufacturers' and consumers' reuse of products**.**

Source Separated Recyclables: Recyclable Materials that are sorted and removed from Refuse, Garbage and Commingled Recyclables by the generator or owner of those Recyclable Materials so that they can be collected in different containers for Recycling or Composting. Examples include sorting newspapers, glass bottles, metal cans, plastic containers, corrugated cardboard, office papers and lawn and garden wastes. Contrast "Commingled Recyclables" and "Single Stream Recyclables".

Subtitle C: section of RCRA that authorizes U.S. EPA to establish regulations regarding Hazardous Waste management

Subtitle D: section of RCRA that authorizes U.S. EPA to establish regulations for Sanitary Landfills.

Superfund: common name for CERCLA, including generally the entire CERCLA program as well as specifically the trust fund established to fund cleanup of contaminated sites. See "CERCLA".

SWANA Certified: describes a Solid Waste professional who meets SWANA's eligibility requirements for education and experience, and who has passed one of SWANA's Certification Exams for a particular Solid Waste management discipline. SWANA currently offers Certification in seven disciplines:

- Management of Collection Systems,
- Management of Composting Programs,
- Management of Construction and Demolition Materials,
- Management of Recycling Systems,
- Management of Landfill Operations,

- Management of Transfer Stations and
- Principles of Management of Municipal Solid Waste Systems.

TCLP: Toxicity Characteristic Leaching Procedure, a lab test designed to determine whether a Solid Waste is a Hazardous Waste because it releases toxic chemicals in Leachate.

Tipping Fee: fee charged for accepting Recyclable Materials or Solid Waste at a Solid Waste Management facility (such as a transfer station, Solid Waste Combustor, MRF, IPC or Sanitary Landfill.).

Transfer Station: facility that receives and consolidates Solid Waste or Recyclable Materials from municipal or commercial collection trucks and self-haulers' vehicles and loads the Solid Waste onto tractor trailers, railcars or barges for long-haul transport to a distant disposal facility.

Universal Wastes: several widely generated Hazardous Wastes identified by US EPA (such as batteries, pesticides, thermostats and mercury containing lamps and equipment) that are subject to streamlined requirements for collection, storage and processing if they are Recycled in accordance with law rather than disposed.

Upstream Diversion: Diversion of Recyclable Materials that occurs prior to a specified place or time before setting out the balance of Recyclable Materials at the curb for collection in a Recyclables collection program. An example of Upstream Diversion is as a generator's Source Reduction, charitable donation or delivery of Recyclable Materials to a Buy Back Center

Variable Rates (or PAYT / Pay as You Throw)**:** charges for Solid Waste collection services that incrementally increase with disposed Refuse and Garbage volume (such as 32, 64 or 96 gallon carts) or weight, with lesser or no charges for Recyclables collection services, to encourage Recycling and discourage disposal. Variable rates do not necessarily reflect actual operational costs but rather constitute behavioral incentives (or disincentives)

WASTECON®: SWANA's Annual Conference and Solid Waste Exposition.

Waste Exchange: organization or service that facilitates or arranges for Recyclable Materials or discarded materials from various generators or industries to be Recycled or Reused by others.

WasteExpo: an annual Solid Waste conference and equipment exposition owned by Primedia, Inc.

Waste Generation: total amount of disposed Solid Waste and diverted Recyclables.

Waste Reduction: See "Source Reduction".

Waste Screening: monitoring and inspecting incoming Solid Waste at a Solid Waste Management facility in order to screen out Solid Waste and other materials that are prohibited or otherwise unacceptable.

Waste-to-Energy: controlled combustion of Solid Waste in Solid Waste Combustors having state-of-the-art pollution controls, and Energy Recovery there from. Types of Waste-to-Energy facilities include **mass burn units** that incinerate mixed Solid Waste with little or no prior separation, and **RDF** (Refuse Derived Fuel) units that separate combustible Solid Waste from

noncombustible Solid Waste prior to combustion. See “Solid Waste Combustors” and “Incinerators”.

Zero Waste: efforts to reduce Solid Waste generation waste to nothing, or as close to nothing as possible, by minimizing excess consumption and maximizing the recovery of Solid Wastes through Recycling and Composting.

ATTACHMENT B
SOLID WASTE SOURCES AND TYPES

- **Agricultural Wastes:** Solid Waste comprised of crop residues and animal manures resulting from agricultural operations.

- **Biosolids:** solid, semisolid, or liquid waste generated from a wastewater treatment plant. Sometimes referred to as Sewage Sludge.

- **Bulky Wastes:** Solid Waste comprised of large discarded materials such as appliances, furniture, automobile parts. Large branches and tree stumps are sometimes included by local definitions.

- **C&D Debris:** materials resulting from the construction and demolition (C&D) of buildings and other structures, including materials such as metals, wood, gypsum, asphalt shingles, roofing, concrete, rocks, rubble, soil, paper, plastics and glass, but excluding putrescible wastes.

- **Combustible Waste:** Solid Waste that will burn, such as waste paper, cardboard, wood, plastics, textiles and leaves, with or without Resource Recovery.

- **Commercial Waste or Recyclables:** Solid Waste or Recyclables from businesses, office buildings, stores and markets and sometimes including Institutional Waste. Contrast " Household Waste or Recyclables".

- **E-Scrap or E-Waste:** discarded electronic equipment including computers, monitors, printers, TVs, stereo systems, VCRs and other personal electronic devices.

- **Food Residuals or Waste:** animal and vegetable materials resulting from the handling and preparation of foods.

- **Garbage:** putrescible Solid Waste.

- **Green Waste:** Solid Waste comprised of grass clippings, shrub and tree cuttings and other Organic Wastes resulting from lawn care and gardening. See also "Yard Debris".

- **Hazardous Waste:** Solid Wastes with properties that make them dangerous or capable of having a harmful effect on human health and the environment. Under RCRA, Hazardous Wastes are specifically defined as wastes that exhibit a specific characteristic (toxicity, flammability, ignitability or infectious) or are specifically listed as a hazardous waste in the Subtitle C. States and provinces may promulgate their own definitions of "Hazardous Waste".

- **Household Waste or Recyclables** (or **residential** or **domestic waste**)**:** Solid Waste or Recyclables originating from homes and residences. Contrast "Commercial Waste".

- **Household Hazardous Waste (HHW):** certain Hazardous Wastes generated in small quantities by homes and residences, such as batteries, paint and oil.

- **Industrial Waste:** Solid Waste originating from industrial processes or manufacturing operations.

- **Institutional Waste:** Solid Waste originating from schools, universities, hospitals and other institutions.

- **Medical Waste (pathological** or **infectious wastes**)**:** certain materials from hospital and health care facilities, including infectious materials, human pathological wastes, human blood products and used sharps.

- **Municipal Solid Waste (MSW):** Solid Waste other than Hazardous Wastes comprised of Commercial, Household, and Institutional Wastes.

- **Organic Wastes:** Solid Wastes containing carbon compounds that are capable of being biologically degraded, including paper, Food Residuals, wood wastes, Yard Debris and plant wastes but not metals and glass or plastic. (Plastic contains carbon compounds and is theoretically organic in nature, but generally is not readily biodegradable.)

  Sewage Sludge: See the correct term, “Biosolids”.

- **Sharps:** discarded needles and syringes.

- **Special Wastes:** Solid Wastes that are often separated from mixed Solid Waste for special handling or management, including Household Hazardous Waste, tires, batteries, discarded pesticides, E-Waste, and Bulky Wastes.

- **White Goods:** discarded household appliances such as stoves, refrigerators, and washing machines.

  Yard Debris: Another term for “Green Waste”.

ATTACHMENT C
PARTIAL LIST OF SOLID WASTE ORGANIZATIONS AND ENTITIES

- **ALMR:** The Association of Lighting and Mercury Recyclers
- **APWA:** The American Public Works Association
- **ASTSWMO:** The Association of State and Territorial Solid Waste Management Officials
- **A&WM:** The Air and Waste Management Association

Composting Council of Canada

- **CARI-ACIR:** Canadian Association of Recycling Industries
- **CMRA:** The Construction Materials Recycling Association
- **EIA:** The Environmental Industries Association
- **Environment Canada**
- **EPA:** The U.S. Environmental Protection Agency
- **GRRN:** The Grassroots Recycling Network
- **ISRI:** The Institute of Scrap Recycling Industries
- **ISWA:** The International Solid Waste Association
- **IWSA:** The Integrated Waste Services Association
- **OSHA:** The Occupational Safety and Health Administration
- **MWMA:** The Municipal Waste Management Association
- **NEMA:** The National Electrical Manufacturers Association
- **NRC:** The National Recycling Coalition
- **NSWMA:** The National Solid Waste Management Association
- **STMC:** The Scrap Tire Management Council
- **SWANA:** The Solid Waste Association of North America
- **USCC:** The US Composting Council
- **WASTEC:** The Waste Equipment Technology Association.

ATTACHMENT D
PARTIAL LIST OF SOLID WASTE PUBLICATIONS

- **American Waste Digest:** Solid Waste products and information,
- **Biocycle:** journal of Composting and Organic Waste Recycling,
- **E News:** SWANA's Monthly Electronic Newsletter,
- **The Hauler Magazine:** Solid Waste equipment catalog,
- **MSW Management:** SWANA's Official Journal for SOLID WASTE professionals,
- **MSW Solutions:** SWANA's Monthly Membership Newsletter,
- **Public Works Journal:** information on Solid Waste and public works issues,
- **Recycling Product News:** Recycling equipment,
- **Resource Recycling:** Recycling and Composting journal,
- **Solid Waste and Recycling:** Canadian solid waste issues,
- **Solid Waste Digest:** regional and state-wide volume and pricing information,
- **Waste Age:** business magazine for the waste industry,
- **Waste Management World:** ISWA's Official Magazine, international coverage,
- **Waste News:** information for businesses that generate and manage wastes.

SWANA TECHNICAL POLICY T-1

INTEGRATED SOLID WASTE MANAGEMENT

Policy

SWANA supports the practice of integrated solid waste management. Integrated solid waste management is a series of complimentary actions to reduce the quantities of solid waste generated and manage that which is generated in an economically and environmentally sound manner. The selection of methods of management should be based upon the environmental, economic and public policies of local government. Integrated solid waste management encompasses materials use practices, solid waste reduction, planning, financing, management and operations, storage, collection and transport, recycling, composting, combustion and landfilling.

Position

SWANA views ISWM to include the following:

- materials use policies - initiatives by industry that result in product and packaging designs which reduce the amount of product or package to be discarded or enhances the reuse, recycling or longevity of products and packaging;
- solid waste reduction - initiatives by manufacturers, businesses, institutions, governments and individuals to reduce the amount of solid waste generated;
- planning - initiatives and steps of local government units [LGUs] to develop comprehensive solid waste management [SWM] plans for the SW generated within, or imported into their jurisdictions;
- financing - initiatives and steps taken by LGUs to provide the appropriate capital money required for the implementation of SWM plans;
- funding - initiatives and steps taken by LGUs to provide the money necessary to operate, maintain, manage and pay debt service on the ISWM system;

- management and operations - initiatives and steps taken by LGUs to implement ISWM plans, including determination of feasibility of the ownership and operations of systems and facilities and the procurement and management of private sector service providers;
- storage, collection and transport - initiatives and steps taken to store, collect and transport SW generated within, or imported into a SWM system;
- siting of ISWM facilities based on local land use, planning and zoning and shall not discriminate based on racial, ethical, cultural or economic characteristics of a community.
- processing methods including:
    - ⇒ recycling of materials,
    - ⇒ composting of the organic fraction of SW,
    - ⇒ combustion with the recovery of energy, and
    - ⇒ sanitary landfilling.

SWANA views these as a menu of methods that can be used to manage SW. The selection of methods of management should be based upon the environmental, economic and public policies of local government.

SWANA supports the policy that LGUs must be responsible for solid waste management, but that LGUs need not own or operate all, or any part of, a solid waste management system. With this responsibility, LGUs must plan, determine the manner in which SW is to be managed and assure that SWM plans are implemented to protect the public interest.

SWANA supports the use of public and/or private sector service providers to provide solid waste operational services as they apply to the ISWM planning developed by local governments. Such services should be provided under local government control, consistent with established local government solid waste management plans and within a competitive environment established by local government. The role of the public and/or private sector service providers is to provide SWM services consistent with Federal, State, Provincial and local government requirements within a competitive environment.

SWANA supports the use of a competitive process by LGU's that evaluates cost, quality of service, and the long term protection of public health, safety and environmental quality when selecting to use public, private or a combination of public and private service providers to provide SWM services.

SWANA TECHNICAL POLICY T-2

SOLID WASTE REDUCTION AND MATERIAL USE PRACTICES IN PRODUCT AND PACKAGING DESIGN

Policy

SWANA supports initiatives by manufacturers, businesses, institutions, governments [states, provinces, local governments], private sector service providers and individuals to reduce the amount of solid waste generated at the source [point of generation]. SWANA supports initiatives by industry to foster and implement material use practices, which should enhance and promote the longevity, reuse and recyclability of products and packaging to minimize the amount of solid waste generated through source reduction.

Position

Manufacturers, businesses, institutions, governments and individuals have both individual and collective roles in reducing the amount of solid waste generated at the source. SWANA takes the following positions on the roles of the respective parties:

Manufacturers and Businesses and Industry

SWANA supports initiatives by industry to implement materials use policies that result in product and packaging designs which strike an optimum balance among economic, environmental and quality considerations that result in one or more of the following:

- reduction in the weight or volume of consumer product packaging,
- reduction in the levels of toxic constituent concentrations in consumer products and packaging,
- improvement of the rate of recycling of consumer products and packaging,
- extension of the life-span of consumer products,
- actions and initiatives to buy materials containing recycled material,
- improvement of the compatibility of discarded materials with conversion processes such as biodegradation and/or combustion to minimize emissions to the environment, and

- improvement in consumer habits by advancing their education and understanding of the benefits of recycling.

Manufacturers and businesses are encouraged, through solid waste audits, to implement solid waste generation reduction initiatives which:

- address manufacturing processes to identify means to reduce the generation of off-spec products and other solid wastes, and implement the findings of those solid waste audits,
- reduce the amount of materials wasted in the manufacturing process,
- prepare actual final products, as well as off-spec and solid waste product materials more readily recyclable,
- plan and implement internal recycling programs to reduce the amount of solid waste introduced into the SW stream,
- utilize raw materials with less toxic constituents or no toxic constituents,
- use reusable instead of single-use items,
- purchase products which contain recyclable materials,
- purchase products which reduce the amount of solid waste generated, and
- adopt business practices which promote less paper use and discarded paper generation.

Provincial and State Governments

Provincial and state governments are encouraged to implement solid waste generation reduction initiatives which:

- provide technical assistance programs for manufacturers, businesses, institutions, local governments and individuals to assist them in planning and implementing solid waste reduction programs,
- assist businesses and manufacturers in the conduct of solid waste audits and plans to implement the findings of those audits,
- consider giving priority to the purchase and use of materials and products with recycled content and which are recyclable after use,
- sponsor pilot solid waste reduction programs to demonstrate the efficacy of such programs and to generate increased support for solid waste reduction programs,

- provide information through clearinghouses, or through relationships with existing clearinghouses, about solid waste reduction programs, methods and initiatives,
- provide grants and loans to stimulate solid waste reduction programs, and
- provide public education about solid waste reduction.

Local Governments

Local governments are encouraged to implement solid waste reduction initiatives which:

- implement purchasing habits that minimize the generation of solid waste, either initially or at the end of the products' life,
- assist businesses, manufacturers, institutions and individuals to assist them in planning and implementing solid waste reduction programs,
- establish alternative programs for the diversion and utilization of yard waste from all generators, such as special leave-on-lawn programs and backyard composting programs,
- consider giving priority to the purchase and use of materials and products with recycled content and which are recyclable after use,
- sponsor reuse programs,
- stimulate change of shopping practices to reduce the amount of solid waste generated, and
- provide public education programs.

Individuals

Individuals are encouraged to implement solid waste generation reduction initiatives that:

- implement leave-on-lawn grass cutting practices,
- support recycling programs,
- consider giving priority to the purchase and use of materials and products with recycled content and which are recyclable after use,
- establish backyard composting programs,
- implement purchasing habits which result in the generation of less solid wastes,
- donate usable items no longer needed rather than discard them,

- maintain and repair items to extend their useful life, and
- support education for children to instill the ethic of the need to reduce the amount and type of solid waste that is generated.

SWANA TECHNICAL POLICY

PRODUCT STEWARDSHIP

I. BACKGROUND

Product stewardship is defined as the act of minimizing the health, safety, environmental and social impacts, and maximizing economic benefits of a product and its packaging throughout all lifecycle stages. The producer of the product has the greatest ability to minimize adverse impacts, but other stakeholders, such as suppliers, retailers, and consumers, also play a role. Stewardship can be either voluntary or required by law.* Product stewardship calls on product manufacturers and others in the supply chain to take on new responsibilities to reduce adverse impacts beginning with design of their products through funding or operating and promoting programs to enable product reuse or recycling at the end of their lives. All participants in a product's life cycle, including retailers, consumers and waste managers, have important roles to play in developing the most workable and cost-effective solutions and participation from all stakeholders should be obtained. Governments have the important role of establishing policies and programs to encourage and oversee product stewardship and create fair and equitable systems for product management. The objective of product stewardship is to reduce, reuse and recycle (in that order) as much of the waste stream as possible while minimizing environmental and health impacts.

Product stewardship programs should encourage manufacturers, importers and/or retailers, with support, oversight and regulatory requirements (if necessary) from governments, to minimize the impacts of their products on the environment and human health by:

1. Continually improving the design, manufacture, handling and disposal of products;

2. Establishing and/or funding programs to collect, process and reuse or recycle products when they are discarded; and

3. Measuring the improvements with reasonable goals and timelines so that policies and programs are achieved.

II. PURPOSE

The purpose of this policy is to establish guiding principles for the Solid Waste Association of North America (SWANA) and its members to use as they collaborate with manufacturers, importers, retailers, consumers, regulators, legislators and waste managers in developing programs to safely, cost-effectively and appropriately manage products throughout their useful lives. This policy focuses primarily on the solid waste management aspects of product stewardship, i.e. the actions taken to reduce the impacts of disposal and to encourage the reuse and recycling of such products**.**

* Definition developed by the **Product Stewardship Institute**, the **Product Policy Institute** and the **California Product Stewardship Council.**

III. SWANA'S GUIDING PRINCIPLES OF PRODUCT STEWARDSHIP

A. Responsibility

Industry (designers, manufacturers, importers, and retailers of products or product components) should be encouraged to reduce product impacts, with the oversight and regulatory requirements (if necessary) of governments and cooperation of consumers.

B. Implementation Priorities

A priority for product stewardship programs should be products that, due to the materials they contain or other characteristics, require special collection, handling, recycling or disposal procedures that are different from the conventional solid waste management practices carried out or arranged by local governments. Implementation of product stewardship should not create new or duplicative programs that preempt existing programs run by or for local governments but should support or expand such programs in cooperation with and oversight by the local government, unless said government agrees to let industry operate and fund the program.

C. Internalize Costs

All product lifecycle costs, such as the use of resources during manufacturing, reducing health, safety, and environmental impacts and managing products at the end of life, should be recognized and reflected in the total product cost.

The costs of managing any product at its end-of-life should be shared by manufacturers, importers, retailers and consumers and the program should be efficient, cost-effective and easy to use by consumers.

D. Incentives for More Environmentally Sound Products and Sustainable Management Practices

Product stewardship programs should create incentives for manufacturers or importers to design and produce products that:

- are made using less energy and materials;
- reduce pollutants;
- generate less waste (through reduction, reuse, recycling, and composting); and
- use less energy to operate.

Programs should also create incentives for manufacturers or importers to develop sustainable and environmentally-sound systems to collect, reuse and recycle or dispose of products at the end of their lives.

E. Flexible Management Strategies

Manufacturers and importers, working with local and other levels of government and public and private solid waste managers, should have flexibility in determining how to address disposal impacts and recycling and reduction goals most effectively. Their performance should be evaluated against measurable, mutually agreed upon goals. Voluntary stewardship programs should be encouraged and facilitated. However, should industry not implement or support programs or performance goals voluntarily, it may be necessary for governments to legislate such requirements. In any case, timelines, ideally developed cooperatively by industry and

governments, should be reasonable and achievable so that new methods for managing materials, including funding, are in place before restrictions are placed on the old ones. If implementation of a funding formula and/or diversion program is not being implemented quickly enough in the opinion of the jurisdictional government, that government may legislate the requirements.

F. Roles and Relationships

Manufacturers, importers and retailers should:

- Support and fund convenient, accessible, voluntary stewardship programs, including public education and market development for recycled products, ideally based upon the mutually agreed-upon performance goals;
- in conjunction with (but not contingent on) funding, assist existing program operators with improving material handling efficiencies, with a view to cost savings; and
- where programs exist, work with local governments to support, promote, improve and expand programs to collect, process and recycle products, unless said government agrees to let industry operate and fund the program.

Governments have a vital role in:

- providing oversight, and technical assistance;
- developing measurable performance goals with input of all stakeholders, ensuring community and public needs are met and programs work harmoniously with existing solid waste collection, processing recycling and disposal programs;
- addressing regulatory barriers, providing regulatory incentives, disincentives or restrictions to ensure a level playing field to encourage the entire product supply chain to participate;
- providing information to consumers to enable them to make responsible purchasing, reuse, recycling and disposal decisions;
- ensuring programs are protective of the environment and public health, transparent and accountable to the public; and
- prohibiting the international shipment of discarded products to facilities that do not comply with standards for worker safety, public health and the environment, and to countries that do not have regulatory programs to enforce such standards.

IV. SWANA's ROLE

SWANA, as a major association for solid waste professionals, will promote the product stewardship principles with this policy as guidance in its dissemination of information and training and in its advocacy role as a voice for the profession.

Approved by the International Board on
March 27, 2014.

Richard Allen, International Secretary
Dated March 28, 2014

T-2.2

SWANA TECHNICAL POLICY

DEPOSIT SYSTEMS

I. POLICY

A variety of approaches to the use of deposit systems have been and are being utilized in North America. These systems have been used both as litter control and solid waste management initiatives. There is little doubt that as integrated municipal solid waste management systems (IMSWMS) are implemented, deposit systems will be considered as a part of those systems. The following SWANA policy on the use of deposit systems as a means of solid waste reduction and waste screening is established.

SWANA's position on deposit systems as a solid waste reduction and waste screening policy is as follows:

1. Solid waste deposit systems should be compatible with existing, or planned energy and materials recovery programs.

2. Solid waste deposit systems should be used as a management tool for a variety of materials in the MSW stream, particularly "special wastes", such as tires, white goods, batteries, waste oils, etc. Deposit systems established for the purpose of managing "special wastes", e.g. white goods, lead acid batteries, tires, certain materials within household hazardous wastes, waste oils, small quantities of hazardous wastes (unregulated), are probably better enacted at the state/provincial level.

3. Deposit system legislation should be enacted at the federal level, for such intents as diversion or reduction of toxic substances in products and for changes in materials use practices. In these instances, federal initiatives can be viewed as an advance disposal charges with the revenue being passed back to states, provinces and local government for implementation of integrated municipal solid waste management systems.

4. Solid waste deposit systems should be used as a means to enhance the management of solid waste materials, which contain toxic substances which when released, at certain concentrations, into the environment can present hazards to human health or the environment.

5. Solid waste deposit systems are one of many methods to be considered for reducing the amount of solid waste generated, and the amount that must be disposed.

6. Solid waste deposit systems should not be limited to just beverage containers.

7. Solid waste deposit systems should be used as a means to divert materials from the solid waste stream to other predetermined management options other than disposal.

8. The deposit levels of solid waste deposit systems should be sufficiently high to influence consumer and manufacturer's behavior regarding the amount of:

   - materials, such as toxic substances, used in the manufacture of products;
   - solid waste discarded;
   - toxic substance concentrations in products which become MSW; and
   - materials diverted to predetermined management options (other than disposal).

9. Solid waste deposit systems should not be used as a means to generate profits for MSWM or non-MSWM programs. Rather, deposit systems are a method to manage MSW and materials from the MSW stream. This is not to say however, that revenue from deposit systems should not be used to finance the costs of managing the diverted materials and for other MSWM initiatives.

10. Because of the complexity of the production and distribution of goods and products, deposit systems are more effective at the state, provincial or federal level. Federal legislation is the preferred method to standardize competition and provide a level playing field for all manufacturers. However, federal legislation should not limit the ability of the states and provinces to also impose certain controls to meet unique state or provincial needs.

11. Solid waste deposit systems should not be implemented in a manner that imposes a regressive tax, causes an increased expenditure of energy resources, or causes an increase in government expenditures.

II. DISCUSSION

Local governments are planning and implementing integrated municipal solid waste management systems (IMSWMS). Concern over diminishing resources, the need to increase and assure capacity, and protection of human health and the environment are the catalysts for initiating IMSWM. As local governments plan for IMSWM some combination of the four IMSWM methods: (landfilling [SLF], waste-to-energy [WTE], recycling [RCL], and waste reduction [WR]) must be utilized to deal with the MSW stream.

WR is defined, for the purposes of this policy, as a means to redirect specific solid waste items from the solid waste stream for one of the following reasons:

1. to remove and divert selected solid waste items to other predetermined management approaches;

2. to remove solid waste items from the solid waste stream for the purpose of reuse or recycling; and

3. to remove materials which contain toxic or prohibited substances which when released, at certain concentrations, into the environment can present hazards to human health or the environment, or other products, which hinder the safe operation of the IMSWMS.

Waste screening is defined as a process whereby a MSWM system establishes activities which provides an understanding of the materials being managed and assures that unwanted or banned materials have been diverted from the MSW stream; waste screening is a verification process which supports established procedures to ban or divert those materials.

Municipal solid waste management systems (MSWMS) are at the end of the materials production and use pipeline. MSWMS do not determine what products the public should buy, nor is it practical for them to do so. Local governments do not currently control, nor do they have the necessary authority, skills, or expertise to determine the material composition of products or design of those products. Further, local governments do not determine when these products become a waste; the user does. Consequently, while local government can encourage public efforts to generate less solid waste, local governments have limited capability to effect, in a measurable way, a significant reduction in the amount, or significant change in the character, of the solid waste that they have the responsibility to manage. Consequently, waste reduction initiatives by local government should be directed to efforts that improve the operation and safety of their MSWMS or improve reuse and recycling opportunities. Local government should look to state, provincial or federal government to lead the effort for waste reduction in the manufacturing sector.

Until recently, deposit systems have focused on beverage containers and have been viewed as either a litter reduction or recycling initiative. This is partly the result of the impression of some groups that a major contributor to litter is beverage containers, and that deposit initiatives will help reduce the litter problem. Deposit systems have not normally been viewed as a waste reduction or solid waste management practice.

Deposit systems should be considered in a broader context and utilized as a waste reduction initiative. As such, they could divert measurable quantities of materials, which would otherwise have to be managed in a MSWM system, to other materials management options. In the context of IMSWM, considering deposits on beverage containers only, is limiting. If implemented for beverage containers, deposits will only impact modestly on reducing the MSW stream. Due to their relative low percentage of total share of the MSW stream. Deposit systems on beverage containers have also been shown to create negative impacts on existing recycling systems. Therefore, in considering deposit systems on beverage containers, or other materials or products which may become solid waste, where recycling programs are in place, states, provinces and local governments need to be sensitive to the economic impact on existing recycling systems. In those instances where recycling systems are in place, those establishing deposit systems need to balance reduction or diversion needs against recycling demands.

Deposit systems have not routinely been considered as a means to reduce solid waste generation, or to divert certain discarded materials to other material management options. In the utilization of deposit systems as a WR initiative, any product with a deposit, which is returned into a materials management system, other than a MSWMS, results in less solid wastes to collect and be managed by local government. However, a deposit system on specific materials will require a system to

assure the proper management of the materials collected and distribution of deposits which are not refunded.

A deposit system can also be used to divert certain solid waste items, often called "special wastes", such as white goods, tires, lead acid batteries, etc. from the MSW stream to other management options. A deposit system can also be used to remove solid waste items containing toxic substances or hazardous materials.

Deposit systems, therefore, offer a means to meet government initiatives to encourage WR; to increase recycling opportunities; to divert materials to other management options; and to remove undesirable materials from the MSW stream. However, when deposit systems are being considered, their impact and compatibility with existing or planned materials and energy recovery programs must be a major factor in determining whether or not such systems should be implemented. In addition, deposit systems may burden retail and wholesale enterprises and may also result in windfall revenues to distributors, states and provinces for unclaimed deposits. A process for the distribution and utilization of these unclaimed deposits should be established when the deposit system is being established. Those unclaimed deposits should be distributed to fund other MSWM initiatives at the state, provincial and local government levels.

SWANA supports deposit systems that are directed at serving as a means to manage a variety of materials that may be in the MSWM stream, if not diverted before discarding. Such systems should be used to remove "special wastes", toxic materials and similar wastes for the purposes of other management methods. SWANA does not support deposit systems that target just beverage containers. Deposit systems should be viewed as a waste reduction and waste screening management tool.

Approved by the Executive Committee on July 31, 1993.

Durwood S. Curling
International Secretary

Dated June 13, 1994

T-3

SWANA TECHNICAL POLICY

STRATEGIC PLANNING FOR INTEGRATED MUNICIPAL SOLID WASTE MANAGEMENT

I. INTEGRATED MUNICIPAL SOLID WASTE MANAGEMENT

SWANA supports a broad definition of municipal solid waste management, more clearly defined as integrated municipal solid waste management, or IMSWM. The overarching goal of IMSWM is to contribute to the health and safety of society, and protect the natural environment. Specifically, IMSWM involves a series of complementary actions to reduce and recover value from wastes, and to dispose in an environmentally sound manner those wastes that for technical or economic reasons cannot be eliminated or recovered. IMSWM encompasses source reduction, reuse, materials recycling, organic materials management, conversion technologies, pollution prevention, waste-to-energy, landfill gas recovery, landfill mining and landfilling. IMSWM also involves the promotion of product stewardship and the purchase of recycled content products, fuels and energy derived from solid waste.

II. INTEGRATED MUNICIPAL SOLID WASTE SYSTEM PLANNING

Comprehensive planning for integrated municipal solid waste systems must consider the relevant components of residential, commercial, institutional, recreational, construction, demolition and industrial waste management including outreach to those involved in generation, collection, storage and management of all materials. Planning should involve public and private service providers, and assess the significant factors including economic, political, legal, technological, social/cultural, environmental and competitive forces.

SWANA's IMSWM policy supports an approach that as a first priority encourages the practices of reducing quantity and recovering value from waste materials. Options that support these practices include source reduction, reuse, recycling, composting, and energy recovery activities conducted in an environmentally and economically sound manner. SWANA believes that there is significant opportunity to improve reduction and recovery levels and expand the market for diverted materials, and that a broad range of options is necessary to allow market forces to work effectively. The most desirable and logical approach to IMSWM would be to:

- Reduce the amount of solid waste generated;
- Promote reuse and repair rather than throwaway and replace;
- Provide for convenient short-term storage, collection and transfer that maximizes efficiency and diversion;
- Recover organics for beneficial use;
- Recover recyclable components and produce new products;

- ♦ Reduce the amount of low-volume, high-toxicity components in solid waste, and reduce the dispersal of pollutants (including air emissions) from solid waste management activities;
- ♦ Utilize as much of that which remains as fuel (waste-to-energy);
- ♦ Dispose in landfills that which can not be managed by the above steps (generating energy whenever possible);
- ♦ Generally minimize resources consumed when implementing the IMSWM system; and
- ♦ Promote the purchase of recycled content products; products whose manufacture utilizes and produce fewer toxic materials; fuels and energy derived from solid waste; and products with increased durability.

SWANA has several technical policies that address IMSWM system planning. These policies address key considerations for viable, long-term comprehensive planning, including but not limited to the following observations, which require IMSWM strategies to be flexible and well-planned:

a. Components of the residential, commercial, institutional, recreational, construction, demolition and industrial waste streams will continue to change over time, altering management approaches and opportunities;
b. Collection, storage, processing, and transfer technology will continue to become increasingly more innovative, changing the opportunities they provide to reduce the waste stream and increase participation and diversion;
c. Solid waste facilities have finite capacity, requiring accurate long-term planning, development and budgeting to provide adequate capacity;
d. Import and export will be supply and demand driven by disposal fees and available capacity elsewhere, requiring control by local government over municipal solid waste generated within its jurisdiction to maintain economic and competitive viability;
e. Recycling and composting will be subject to the supply and demand process, regulatory changes and varying disposal tip fees across the country, requiring fiscal strategies that consider fluctuating costs and revenues;
f. Consumers will generate an increasing demand for products that have been source-reduced and are used, refurbished and recycled, requiring local both private and public sector entities to establish green purchasing and product stewardship policies;
g. Regionalization will continue as neighboring jurisdictions attempt to become more economically competitive when managing wastes that may be shipped in and out of multiple, but geographically close jurisdictions;
h. Identification, disclosure, and planning for the true, full costs of each component of the IMSWM system will be critical to efficient operations, setting equitable unit-based rates and establishing tax-payer trust;
i. While not all components of an IMSWM system generate revenues that balance their costs, local solid waste programs that operate in an enterprise fund environment generally will have less significant impacts from down swings in regional economies; and
j. The products of reuse, re-fabrication, recycling, and composting activities should provide value to consumers without substantial subsidy or regulatory support in order to ensure their long-term viability.

III. LOCAL GOVERNMENT RESPONSIBILITY

Local governments are charged with protecting human health and the environment for their community. They also address aesthetic and service expectations for their citizens. Governments have the responsibility to assure the safe, efficient, and environmentally and economically sustainable management of municipal solid waste, including reduction and diversion:

- For solid waste and recovered materials generated, collected, processed and/or disposed within their jurisdiction;
- For solid waste and recovered materials imported into their jurisdiction; and
- For solid waste and recovered materials exported out of their jurisdiction.

SWANA believes that local government, while retaining ultimate responsibility, does not need to own or operate all components of its solid waste system and may facilitate the provision of any or all components by other public, non-profit and private sector entities. Regardless of service provision within the system, local governments at a minimum must:

- Develop a system-wide management plan that sets goals, accurately identifies and evaluates system options, establishes a basis for policy, provides a mechanism for measuring progress, and sets sustainable budgets for programs and infrastructure;
- Establish a process to determine how IMSWM system components will be owned and/or operated by the local governments or other entities;
- Establish a process for ensuring that services provided by other entities meet the needs of the tax-payers in terms of both breadth and integrity, and that the services are supported by proper education and awareness;
- Oversee and guide implementation and revision (as needed) of the management plan;
- Collect data necessary to evaluate progress and justify program improvements;
- Develop local regulations, policies or ordinances necessary to support the plan by both public and private sector entities; and
- Ensure that compliance with applicable local, state, provincial and federal regulations is achieved or exceeded.

IV. RESPONSIBILITIES OF OTHER PUBLIC AND PRIVATE ENTITIES

While the provision of an IMSWM system is the responsibility of local government, state/provincial and federal governments can and should set and direct policy to support local government's initiatives. Each level of government has unique roles, which can be used to facilitate effective IMSWM. In addition, residents, industry, businesses, institutions, and solid waste providers are also essential to a successful IMSWM system.

The federal government should support local governments with the following activities that include, but are not limited to:

- Establishing national goals for IMSWM;
- Providing guidance for conducting uniform planning and measuring program results and benefits in a consistent manner;
- Fostering the development of state/provincial plans and facilitating information transfer between entities;

- Developing sustainable markets for reused and diverted (including recyclable and organic) materials, and recovered energy;
- Identifying and addressing restrictive conditions which prevent the implementation of IMSWM systems;
- Facilitating product stewardship of mainstream materials as well as those requiring special handling;
- Broadening national perspectives on renewable energy and green power to include waste-to-energy, conversion technologies, and recovery and use of landfill gas;
- Fostering partnerships within and between public, private and non-profit sectors both nationally and internationally;
- Developing substantive green purchasing guidance and implementing at the national level to set a meaningful example for states and provinces;
- Encouraging source reduction;
- Facilitating research and development by both public and private sectors;
- Providing financial incentives to stimulate start-up investments in recycling, composting, use of recycled materials and generation of fuel and energy from solid waste;
- Providing training for IMSWM system planning, implementation and evaluation; and
- Establishing regulations to protect public health and set environmental protection standards.

States and provinces must support local governments with the following activities that include, but are not limited to:

- Establishing state/provincial goals for IMSWM;
- Ensuring the competency of practitioners of IMSWM through standards and certification;
- Facilitating local planning and generation of uniform data;
- Facilitating information transfer between entities;
- Supporting local markets for reused and diverted (including recyclable and organic) materials, and recovered energy;
- Fostering partnerships within and between public, private and non-profit sectors with the state or province;
- Implementing substantive green purchasing policies and setting a meaningful example for local governments;
- Identifying and providing opportunities to divert low-volume, high-toxicity components in solid waste recovery and/or disposal activities;
- Providing training for IMSWM system planning, implementation and evaluation; and
- Providing resources to support legislative and regulatory mandates.

Residents must also support local government initiatives with the following activities that include, but are not limited to:

- Adopting lifestyles that promote and implement source reduction, reuse, recycling and composting at home;

- Purchasing recycled content products based on availability and economics in order to create market demand;
- Supporting manufacturers and retailers that participate in practices that foster source reduction, waste diversion and pollution prevention;
- Understanding the benefits of, and paying fair rates for, IMSWM services received.

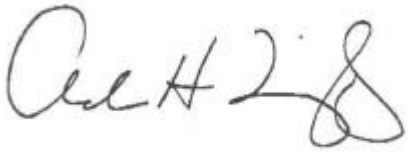
Industry, businesses and institutions must also support local government initiatives with the following activities that include, but are not limited to:

- Adopting business practices that promote and implement source reduction, reuse and recycling; and composting;
- Complying with regulations and laws pertaining to IMSWM;
- Adopting purchasing policies that create market demand for recycled and recovered products;
- Supporting and participating in improved product stewardship practices;
- Conducting research and product development activities for the purpose of reducing the volume and/or toxicity of waste generated; and
- Working with local governments to plan for and provide solid waste management services, including the intermediary processing and remanufacture of recycled and recovered materials.

Solid waste service providers may be public, private or non-profit entities. They must also work within the planning framework established by governments to provide a wide range of services including but not limited to:

- Public education programs to support IMSWM to the residential, commercial, institutional, recreational, construction, demolition and industrial sectors;
- Collection of solid waste and recovered materials from residences, businesses and industry, through contracts, franchises and/or open market conditions;
- Ownership and/or operation of transfer stations, drop-off centers, reuse centers, MRFs, composting facilities, landfills and waste-to-energy facilities;
- Marketing, brokering or otherwise promoting the products of reuse, recycling and composting programs;
- Services for the collection, recovery and disposal of special wastes; and
- Services associated with IMSWM system analysis, system improvements, research and development, and other ancillary activities as identified by local government.

Approved by the International Board on August 11, 2003.



International Secretary

Dated August 11, 2003

T-3.1
SWANA TECHNICAL POLICY

RESOURCE RECOVERY AS AN INTEGRAL PART OF A COMPREHENSIVE SOLID WASTE MANAGEMENT SYSTEM

I. BACKGROUND

Throughout North America the management of municipal solid waste continues to represent one of our major urban problems. The mid-1980's finds many large urban centers as well as smaller jurisdictions are at a critical junction in managing their solid waste.

Federal, state and local policies are seeking to establish options that allow for comprehensive approaches to managing municipal solid waste. These options include waste reduction, recycling, composting, energy recovery, landfill gas recovery, and sanitary landfilling. This policy paper addresses the implementation of waste reduction, recycling and composting initiatives as part of a comprehensive solid waste management approach.

Waste reduction, recycling, and composting activities are not new. They have been a part of solid waste management systems for years. While much has been accomplished in this area, more can and needs to be done.

There is a growing appreciation that waste reduction and recycling are part of a comprehensive approach to solid waste management.

State-of-the-art energy recovery facilities with strict environmental controls are part of a comprehensive approach.

Consequently, public support and understanding needs to be developed to support not only materials recovery but a comprehensive approach which selects the best solid waste management options to assure maximum recovery of economically marketable materials, utilization of the energy value of solid waste and a reduction in the amount of solid wastes that must go to sanitary landfills.

Local government and their citizens must establish the opportunity for all approaches to be used where they make economic and environmental sense. The problem is big enough to need more than one approach and all approaches should be supported. The public must be encouraged to accept a comprehensive and economic approach because no one option will successfully manage all solid wastes generated in a community.

II. POLICY POSITION

SWANA as an organization of solid waste management professionals supports the following position relative to resource recovery as an integral part of a comprehensive solid waste management system:

- Use the term Resource Recovery to mean both materials, landfill gas and energy recovery.

- Support local, state (province) and federal legislation initiatives that provide economic incentives for materials recovery.

- Support the development of materials and energy recovery technologies that facilitate or improve the viability of resource recovery options and reduce the amount of solid wastes that must go to sanitary landfills.

- Develop solid waste management training programs and seminars that encourage a balanced approach to managing municipal solid waste.

- Develop a standard for establishing and evaluating the full avoided cost for resource recovery, plus known avoided environmental costs for resource recovery.

Approved by the Executive Committee on April 7, 1987.

Durwood S. Curling
International Secretary

Dated June 13, 1994

T-3.2
SWANA TECHNICAL POLICY

THE ROLE OF STATE/PROVINCIAL GOVERNMENT IN MUNICIPAL SOLID WASTE MANAGEMENT

I. BACKGROUND

Municipal solid waste management is essentially the domain of state/provincial/local governments and the municipal solid waste management service industry. Federal involvement has for the most part not been active for a number of years in the U.S. and was always limited in Canada. Municipal solid waste management is divided principally into two parts, regulations and operations. State/provincial governments are, for the most part, the regulator, and local government and their contractors the operators. This discussion will focus on the regulatory role of state/provincial government in municipal solid waste management. Other possible roles for state/provincial government will also be reviewed. This discussion is predicated upon two fundamental premises: (1) the quality of operations and (2) the systems selected are directly related to the quality of regulations in effect and the manner in which those regulations are written, interpreted and enforced.

There is a wide diversity in the quality of state/provincial municipal solid waste regulatory programs. In the U.S., this quality is greatly affected by the demands by the federal government for major state government investments to establish hazardous waste management regulatory programs. In Canada, this quality is greatly affected by a continuing diminishment of federal attention and the strong decentralized form of government. Further, the historical source for state/provincial solid waste management programs (health agencies) tends to lead to a somewhat non-involved regulatory attitude towards local government.

This wide diversity of state/provincial municipal solid waste management programs results in a number of improper practices by local government and industry:

- a tendency to operate at levels which result in systems which affect public health and environmental quality;
- under-capitalized systems which are often inadequate and unable to do the job;
- under-salaried and unqualified personnel operating the systems;
- political indifference to the need to properly fund and operate systems;
- negative public attitudes toward municipal solid waste management;
- financial disincentives to utilize improved or more costly alternatives;

- a continued dependence upon improperly sited, designed and operated land disposal facilities.

This policy position paper presents arguments to support the premise that the major cause of these improper practices can be largely attributed to the lack of well-established regulatory programs. If this is the case, then SWANA will support steps that will help support and direct state/provincial investments into program efforts that will assure that state/provincial regulatory programs are what they should be. SWANA fully supports strong state/provincial municipal solid waste programs and will work with interested parties to assist such programs.

II. DISCUSSION

What is the range of activities that can be a part of a state/provincial municipal solid waste management program? What are the program activities that are best done at the state/provincial level? What is the role of the federal government that would influence the shape and form of state/provincial municipal solid waste management programs? What should be the fundamental regulatory/enforcement posture of state/provincial municipal solid waste management programs? How should these programs be funded? What should local government and the private sector do to assure that there are effective state/provincial municipal solid waste management programs? Can local government and the private sector agree upon what are effective state/provincial programs?

Activities that can be part of state/provincial programs include:

- regulations and enforcement
- training and education
- technical assistance
- research and development
- financial assistance
- ownership/operation of facilities

The significance of each of these activities is discussed below.

A. Regulation and Enforcement

It is absolutely essential that we have regulations if systems are to adequately protect public health and environmental quality. An entire treatise could be written about what are good regulations and what constitutes acceptable enforcement. From the viewpoint of local government owned/operated systems or local government contracted systems; strong, intelligently developed regulations for municipal solid waste management systems enforced equally and fairly against all who own and/or operate such systems makes considerable sense. The enforcement of regulations should not differentiate between local government/private sector ownership; but should be enforced through surveillance and inspection and necessary regulatory action in the court system for non-compliance.

Regulatory programs need to be comprehensive in nature and must include siting involvement, permitting of facilities and continued surveillance through frequently planned and unplanned inspections. Current programs appear to be weak in all three of these areas resulting in varying degrees of regulatory effectiveness. Many agencies are reluctant to become involved in siting, arguing that siting is the sole right of local government. Local government should retain the rights regarding the determination of land use. It is doubtful, however, that siting in the future will be successful without a state/provincial program presence. Permitting of facilities is the key to long-term success of a regulatory program. Through the permit, the conditions of the permit, and the surveillance of compliance with permit conditions, a regulatory agency can assure the success of its regulations.

Siting, permitting and surveillance are three of the regulatory functions that are the end results of established regulations. Through the establishment of regulations, a state/provincial program can achieve the purposes of public health and environmental quality protection. The regulations must be based upon established and applicable technologies that can be universally used and not "experimental" concepts. Further, the regulations must be written so they can be interpreted uniformly by the regulator and the regulatee. Hopefully, regulatory programs will develop their regulations with those to be regulated as a partner in their development.

Current federal investment in municipal solid waste enforcement does not exist. In the U.S., legislation exists which could be a basis for future federal involvement. In the absence of strong state effort within the decade, we can fully expect to see a much stronger federal role. The same solution may not apply to Canada. Provincial government is much stronger than Canadian federal government. However, ineffective responses to regulating municipal solid waste management systems could result in federal action. Some uniformity between states and provinces argues to some degree for national standards to which state/provincial governments could write regulations. The problem is, can federal government involvement be limited to national standards without further federal enforcement? The jury is still out on this question. In the meantime, there is time for state/provincial government to act to develop effective regulatory programs.

B. Training and Location

The U.S. and Canadian federal governments have a proud tradition of involvement in training and education. That effort, however, may have detracted from state/provincial investment in such efforts. There does seem, however, a need for joint efforts in such activities, but little can be expected from either federal government. Consequently, it must fall to state/provincial programs to identify their basic training needs and then go about seeing that those needs are met. There is little doubt that the people who own and operate municipal solid waste management systems need accessibility to training. The ability of organizations like SWANA to deliver enough training to assure adequately trained people is limited due to lack of funds and a lack of requirements for training. SWANA has taken a strong position in favor of operator certification. Such certification is predicated upon state regulation requiring certification and training and continuing education. Obviously, therefore, the need for training can be enhanced by state/provincial efforts in this area. It makes sense for states/provinces to support the regulatory program with training to enable operators to operate systems to meet established regulations.

C. Technical Assistance

Technical assistance is closely attuned to training and education. It differs in that it is a program that is often site specific and, therefore, is a one-on-one program effort.

Consequently, technical assistance is a useful state/provincial program activity, but not one that can assure broad municipal solid waste management system compliance with regulations or good practices. Therefore, the significance of this activity within a state/provincial program is less effective than regulation and enforcement or training and education.

The U.S. municipal solid waste program in the past was deeply involved in technical assistance. That program is gone and will never be recreated. No such program ever really existed in Canada, and will not appear in the future. Consequently, while there is a role for federal government, it will not happen. State/provincial government, therefore, must develop those technical assistance efforts that they believe will fulfill their program needs.

D. Research and Development

Research and development is expensive, long term and badly needed. The ability for a state/provincial program to carry out such activity is limited. Although funding from state/provincial government to research institutions can and is done, it seems unlikely that the results can have widespread application. The needs for municipal solid waste management research are far greater than the specific needs for an individual state/province and, consequently other organizations need to be encouraged to pursue such efforts. States/provinces might band together to fund and support research to fit many needs, but the character of these governments tend to prevent such cooperation. Certainly, federal support of research and development should be encouraged. In addition, the private sector which currently is investing little in research and development needs to take a much more responsible role in this area. It also seems reasonable that if there are greater demands for improved practices and systems, the market place should respond to some degree. Therefore, the significance of state/provincial support of research and development seems limited in creating the need for new systems and practices for municipal solid waste management through regulation and enforcement.

E. Financial Assistance

Some states and provinces provide financial assistance to local government. This assistance for the most part focuses on planning for municipal solid waste management. Such assistance usually provides the same degree of non-progress as any other funding mechanism that supports planning and not implementation. Consequently, utilizing planning financial assistance seems to fail to bring about improved practices and systems. Further, such funding favors local government involvement over business planning by the private sector and consequently may skew decisions relative to the selection of best options in municipal solid waste management for local government and industry. Financial assistance also has the potential effect of purchasing decisions because the money is there, rather than because the decision makes the best sense economically. Consequently, financial assistance fails to create the opportunity where new and improved practices and systems can compete economically. The results, therefore, are non-achievement of

the intended purpose of public health and environmental quality protection through the use of advanced, effective, economically sound practices and systems. Federal government financial assistance is accompanied by federal determination of what should be done locally, even if the funds pass through state/provincial hands. For solid waste management, it seems to make little sense to have such assistance.

F. Ownership/Operations of Facilities

Few state/provincial programs own or operate municipal solid waste management systems. Through various mechanisms some state/provincial agencies have equity involvement in systems. However, they are not operating partners and should not be so.

The role of local government is to protect public health and that role dictates active involvement in the ownership/operation/management of municipal solid waste management systems. Further, involvement by state/provincial government in selecting systems and facilities may negate the ability to adequately enforce regulations. There are proven instances where this can be avoided, but it takes special authorities and districts which are essentially not organisms of state government. It seems inadvisable, therefore, to have state government own/operate municipal solid waste management systems.

III. POSITION

In summary, therefore, SWANA has presented arguments in support of significant state/provincial investments in regulations and enforcement with positive support in the form of training, education and technical assistance. These investments would be spent to develop and operate aggressive and balanced regulatory programs. Other roles that would draw away from these efforts seems not only inadvisable but misdirected. In the best of all worlds, it would be nice to do everything, but the North American economy is not going to allow that. Therefore, investments must be directed where the maximum results can be achieved. The investments, therefore, must go first to regulation and enforcement. Only after those needs have been met should other activities be considered.

What does SWANA consider constitutes an acceptable regulatory and enforcement state/provincial program. Certainly the regulations should address all aspects of municipal solid waste management. The results of improper hazardous waste management practices argues very persuasively for cradle-to-grave control. Further, all municipal solid waste management systems essentially handle the same types of municipal solid waste and, therefore, all systems should have to meet the same regulations. Finally, poor operations by government or the private sector can and will result in the same degree of threat to public health and environmental quality degradation. Consequently, the enforcement of regulations has to be the same for all systems regardless of ownership.

One could argue forever regarding what should be included in a comprehensive state/provincial solid waste management system. While technical assistance, training, education, financial assistance and planning may be very important elements of such a program, the most essential element is a very aggressive and balanced regulatory program. We have tried many non-regulatory

ways to guide the improvement of solid waste management practices and all have fallen short of being effective. State/provincial solid waste management programs that are without regulatory clout are ineffective in improving practices. Recurring problems with public non-acceptance of disposal as an important part of solid waste management is directly attributable to the ineffective efforts of our state/provincial regulatory programs.

We need and must have strong, aggressive and involved state/provincial regulatory programs. Strong, aggressive and involved state/provincial regulatory programs are ones with the following essential elements.

A. Elements

1. Well defined regulations with clear authority to enforce those regulations in both the civil and criminal courts.

2. Well defined implementation strategies which clearly describe how the regulatory program will be implemented.

3. Well defined requirements for permits for all facilities and an intelligent approach to the receipt and processing of permit applications.

4. A program of surveillance of all facilities and practices regulated which is constant and ever present.

5. A willingness to go to court to get compliance.

A balanced state/provincial regulatory program is one with the following essential elements:

B. Elements

1. Investments on all aspects of the regulatory program, not just on a particular portion.

2. Prioritization of enforcement strategies to deal with more severe cases first, thereby recognizing that all facilities do not necessarily represent the same degree of environmental and public health threat.

3. Equal enforcement of the regulations regardless of the ownership of operational responsibility.

4. Equal enforcement for similar facilities and practices.

At the present time such comprehensive regulatory programs do not exist in many states or provinces. This should not be construed as an indictment of the lack of commitment or effort on the part of state/provincial government. Rather, it is an indictment of the solid waste management profession that we have not seen to the development of such programs. We need such programs if we are to be effective, efficient and economic in the management of solid wastes.

We need such programs if we are to assure the public that facilities and practices installed today will not be environmental and public health burdens in the future. It seems unlikely that such programs will occur unless we see that they are formed. SWANA is committed to working with existing state/provincial programs to develop the regulatory programs needed.

Approved by the Executive Committee on August 1985.

Durwood S. Curling
International Secretary

Dated June 13, 1994

T-3.3
SWANA TECHNICAL POLICY

THE ROLE OF THE PUBLIC SECTOR IN THE MANAGEMENT OF MUNICIPAL SOLID WASTE

I. INTRODUCTION

In formulating policy with respect to local government responsibility for managing municipal solid waste, the Association should build on its mission as the foundation for establishing programs that are responsive to the needs of all its members. Municipal solid waste management is an essential public service necessary to protect public health, public safety and the environment. It is because of this fact that local government must assume responsibility for assuring and overseeing the provision of municipal solid waste management services to its citizens, businesses and industries.

SWANA defines local government to mean any incorporated or unincorporated jurisdiction including cities, municipalities, towns, townships, boroughs, districts, special purpose districts, authorities, counties or similar local government entities which have been established by state, provincial or local government law for the purposes of serving a designated segment of population within a state or province, or interstate/interprovincial areas.

SWANA defines municipal solid waste as all solid wastes generated within the jurisdiction of a local government that is not determined to be a hazardous waste as defined and regulated by any federal, state or provincial legislation or regulation.

SWANA defines municipal solid waste management as all services, operations, facilities, and processes used to store, collect, transport, separate, treat, recover, process, or dispose of municipal solid waste.

Municipal solid waste management today is provided in a variety of institutional arrangements. These arrangements are varied and the arrangements listed below may not be inclusive. However, they clearly illustrate the most significant approaches in practice today:

- Unrestricted: Local government takes no responsibility, provides no protection of public interests; exercises no control over issues related to municipal solid waste management or provides no oversight. All services are totally dependent upon the ability of the unrestricted competitive process.

- Licensing: Local government licenses organizations to conduct business to provide municipal solid waste services within their jurisdiction.

- Contract and Franchising: Local government takes an active role in defining the degree of service, determines how the private sector will deliver the services and at what costs, and oversees the delivery of the service authorized.

- Local Government Owned: Local government owns the facilities and contracts for the operation of municipal solid waste collection, transfer, resource recovery and disposal services/operations.

- Local Government Owned and Operated: Local government owns and is responsible for the operation of municipal solid waste management services, operations, policies and facilities.

- Authorities/Special Purpose Districts: An institutional arrangement that has state, provincial or local government (political) oversight and allows the institution to be self-reliant for revenues. The institution has the power to utilize the business approach of the private sector.

- Highly-Organized Local Government Involvement: Local government is strong and is involved in land use planning, zoning and strict enforcement of licensing regulations. It allows efficient participation by the private sector in providing the necessary services.

No one particular role for local government involvement in the management of municipal solid waste can reasonably be selected as the preferred arrangement. Individual local governments are faced with assessing and defining how they choose to exercise municipal solid waste management responsibilities based on unique local circumstances. In determining how municipal solid waste will be managed, local government must consider the public expectations for a safe, reliable and cost effective municipal solid waste management system. However, to assure the protection of the public interest, public health and the environment, local government cannot ignore its responsibilities. Local government, therefore, must exercise overall responsibility for the planning for municipal solid waste management and for the provision of municipal solid waste management services.

II. DISCUSSION

Local government provides a wide degree of public services in a manner that best serves the public interest as defined locally. In determining how municipal solid waste is to be managed, the following issues must be addressed:

- How is the public best served?

- If considering a change from current practices, are the services being offered by the various options under consideration the same?

- Should services be provided by public or private operations? What are the advantages and disadvantages of each option?

- Who should own facilities such as transfer stations, recycling facilities, landfills, incinerators, and waste-to-energy facilities? What are the advantages and disadvantages of each option?

- Who should operate the various facilities which are part of a municipal solid waste management system? What are the advantages and disadvantages of each option?

- Has local government kept the politics out of municipal solid waste management?

- How can local government assure a level playing field for all private operations in municipal solid waste management?

III. POSITION

A. Managing municipal solid waste is a public service. It is a public service established to protect human health and environmental quality. SWANA supports a policy that requires local government to be responsible for the protection of public health, environmental quality and safety within their jurisdictions. Therefore, local governments must plan for, exercise control over, and make the decisions relative to how municipal solid waste is managed within their jurisdictions.

B. If state/provincial legislation does not place responsibility for municipal solid waste management in the hands of local government, SWANA supports the passage of such legislation.

C. SWANA supports a policy to require local government to develop comprehensive municipal solid waste management plans which determine exactly how all solid waste generated within their jurisdictions are managed. Since local governments are held responsible for planning for growth, they must judge how all public services are delivered, including municipal solid waste management.

D. Local government must establish locally-organized municipal solid waste management systems that are safe, reliable, efficient, reasonably-priced, and environmentally-sound.

E. Local government should determine how all municipal solid waste is managed within its jurisdiction. Such determinations should be established by planning, ordinances, guidelines and licenses.

F. Local government should determine which municipal solid waste services should be provided by the public and private sectors, how those services will be provided, and under what conditions those services will operate.

G. Local government should determine what municipal solid waste management facilities should be owned by the public and private sectors, how those facilities will operate, who will operate those facilities, and under what conditions they will operate.

H. Public or private owned operators can and are comparable in level of service delivered, quality of operation, efficiency and effectiveness of service, and in cost. Where this is not the case, it is due to the failure of the owners and operators to apply sound technologies, systems, management and economic principles.

I. Where there are contract services allowed within a jurisdiction, local government should assure that the costs of those services are established by a fair, equitable, and competitive process.

J. SWANA does not support attacks on either the professionalism or capabilities of publicly or privately employed solid waste management professionals or their employees.

IV. POLICY IMPLEMENTATION

SWANA will implement this policy by:

A. Establishing programs designed to upgrade the professional knowledge, skills, and abilities of all individuals involved in managing municipal solid waste management services. SWANA intends to develop and provide training programs in various managerial, technical, operational, environmental, and financial aspects of municipal solid waste management in support of this policy. Special emphasis will be made to assist those members responsible for managing local government owned, operated, or managed municipal solid waste management systems.

B. Supporting the establishment of rigorous siting, environmental, safety, operations and financial requirements for all providers of municipal solid waste management services. SWANA as the center of technical excellence, will develop guidance, technical information programs and provide technical assistance to help local providers of municipal solid waste management services.

Approved by the Executive Committee on August 19, 1990.

Durwood S. Curling
International Secretary

Dated June 13, 1994

T-3.4
SWANA Technical Policy

OWNERSHIP OF MUNICIPAL SOLID WASTE MANAGEMENT SYSTEMS

I. INTRODUCTION

Local government, in the form of various political subdivisions or authorities, has the responsibility for the management of all municipal solid waste generated within its jurisdiction. In exercising that responsibility local government should:

- establish legal authority for that responsibility
- consider waste flow control
- plan for an integrated municipal solid waste management system
- determine which portions of the integrated municipal solid waste system will be owned and operated by public entities and which shall be owned or operated by private entities.
- establish a process to assure oversight of those portions under direct ownership or operational responsibility of private entities
- oversee and guide the implementation of the developed plan
- assure that all appropriate local, state, and federal regulations are met

Planning, ownership, operation; these three issues are essential in assuring environmentally sound and economical integrated municipal solid waste management (IMSWM) systems. The resolution and implementation of each of these issues must be determined by local government. This policy paper addresses the issue of ownership. Other SWANA position papers address the other two issues.

II. DISCUSSION

A. The Municipal Solid Waste Stream

Municipal solid waste is composed of the following major solid waste streams:

- residential solid waste - those solid wastes generated by single and multi-family dwellings
- commercial solid waste-those solid wastes generated by commercial activities (offices, retail and wholesale outlets, government offices, etc.)
- industrial-those solid wastes (office and shipping activities, non-hazardous wastes, etc.) which are non-process related

In addition, MSW frequently is composed of a number of other solid waste streams:

- vegetative wastes (horticultural, lawn service, nursery related wastes, etc.)
- biomedical wastes (hospitals, health care facilities, veterinary clinics, medical/veterinary laboratories, etc.)
- street and catchment basin wastes
- hazardous wastes from small businesses and industries which fall below state, provincial, federal regulated levels.

Solid wastes which may be a part of, but frequently are not a part of MSW, include:

- sludge
- construction and demolition wastes
- hazardous wastes regulated under hazardous waste regulations
- septic tank pumpings
- liquid wastes
- discarded automobiles
- many others

Even if they are not in certain states or provinces, a part of MSW, these wastes may appear in MSWM and at MSWM systems and facilities. Therefore, these wastes could be included as part of an integrated municipal solid waste management plan.

B. The Municipal Solid Waste Management System

The municipal solid waste management system (MSWMS) is composed of the following unit operations (actions - steps - methods - processes - facilities):

- waste reduction/generation
- collection
- transfer
- recovery/recycling
- composting
- combustion (incineration or waste-to-energy)
- land disposal (landfilling)

Each of these unit operations is the direct result of an action on the part of an individual or enterprise. These actions result in the generation of solid waste. It then falls to local government to plan and assure the necessary operations to remove and manage these solid wastes from their point of generation. Local government must then assure that there is a system to move these through the management cycle. Finally, local government must assure that there is capacity to process and utilize, where possible, these wastes.

1. *Waste Reduction/Generation*

Local government has limited ability to impact on the amount of solid waste generated. Local government must however take steps necessary to meet state/provincial/federal mandated waste reduction requirements. To protect human health and the environment local government can and must dictate storage procedures and any preparation necessary to make solid wastes generated suitable for subsequent management.

2. *Collection*

Local government can and should determine how all municipal solid waste generated within its jurisdiction is collected. This is to assure the protection of human health and the environment. Collection services can be done by either public or private forces or a combination of these forces.

3. *Transfer*

Transfer stations serve as an integrated part of a solid waste system. Transfer stations are utilized to receive collected solid waste and to disperse solid waste to treatment, processing, combustion and landfill facilities. Local government should determine the need and sites for transfer facilities; who should own these facilities; and who should operate such facilities.

4. *Recycling/Recovery*

The recovery of recyclable materials from the MSW stream occurs in a number of steps:

- at commercial and industrial sites
- at the curbside in residential areas
- within multi-family dwellings
- at drop-off facilities
- at central processing facilities
- prior to processing, combustion, disposal

Issues which local government must face in planning for the recovery/recycling portion of an integrated MSWM system include:

- changing demands on the system which result from fluctuating market conditions for recyclable materials recovered from the solid waste stream
- the relationship of existing and future commercial and industrial owned/operated solid waste recycling efforts and how any local government recycling initiatives interact and relate to these efforts
- recovery of materials from the MSW stream not currently addressed by commercial and industrial activities
- ownership and operation of curbside recycling and multi-family dwelling recycling systems
- ownership of drop-off facilities
- ownership and operation of central processing facilities

5. *Composting Facilities*

There are two major portions of the MSW stream which offers the opportunity for composting:

- vegetative wastes (yard, horticultural, nursery, lawn service wastes, etc.)
- organic portions of the MSW stream (food wastes. etc)

In planning for an integrated municipal solid waste stream, local government should determine if composting will be part of the system; how these wastes will be collected; who will own the composting facilities; who will operate those facilities; and who will utilize or manage the end product.

6. *Combustion Facilities*

Combustion facilities will be either incinerators or waste-to-energy facilities. Waste-to-energy facilities will be either RDF or mass burn technologies. Ownership and operation of these facilities is an extremely complex issue.

In development an integrated municipal solid waste plan, local government will have to determine ownership, financing, operating and marketing responsibilities.

7. *Disposal Facilities*

The ownership of disposal facilities is the most significant decision that local government will have to make in planning and implementing an integrated municipal solid waste management system. While poor operation may result in violations by recycling, composting or combustion facilities, the significance of the violation will be immediate. For disposal facilities improper operations can have long term impact long after the facility is closed. These risks must be an essential element in the determination of who should own and operate these facilities.

III. POLICY

A. Integrated Municipal Solid Waste Management Planning

Municipal solid waste must be managed based upon a local government prepared integrated municipal solid waste management plan. This plan must assess each portion of the municipal solid waste stream. This will assure that all solid wastes are accounted for and those wastes are managed to protect human health and the environment. It will also assure that there is sufficient capacity for the proper management of these wastes. Capacity will be provided through reduction, recycling, combustion and landfilling.

Ownership and operation of services, systems and facilities must also be determined in the planning process. This will assure that all solid wastes generated, recovered/recycled, processed, combusted or landfilled are done so to protect the public interests, human health and the environment. This will also assure that local commercial and industrial interests are considered.

B. Ownership of Transfer Stations

Transfer stations are an integral part of a municipal solid waste management system. The collection and transportation logistics and economics, and the ownership of the collection subsystem determine the need for transfer stations.

If the collection subsystem is publicly owned, any transfer stations that are required, due to transportation logistics and economics, would most likely be publicly owned (an exception could be a small community who collects the waste and then deposits it in a larger transfer station which may be publicly or privately owned).

If the collection subsystem is privately owned, the local government responsible for municipal solid waste management will have to establish a policy for the ownership of transfer stations within its integrated municipal solid waste management system. This policy must be based upon an analysis of the need for, and the logistics and economics of, such facilities. Based upon such an analysis, local government can then decide that the need exists, or the economic or logistical benefits justify, having the public body own the transfer capability, or the local government may decide to leave the siting, ownership and operation of transfer facilities with the same private parties responsible for collection, but within the framework of the integrated municipal solid waste management plan.

Consequently, ownership of such facilities should be based upon a local government analysis of ownership of the collection subsystem, and the need and economic or logistical benefits of such facilities.

C. Ownership of Recycling Systems and Facilities

In many local government jurisdictions there already exists recycling facilities (or they exist within economical distances from the local jurisdiction) which process and recycle some portion of the municipal solid waste stream. Future integrated municipal solid waste planning must factor into the planning process this existing capacity (and potential expansion capabilities of those facilities) and should take all appropriate steps to foster the continuation, participation and expansion of such facilities.

In order for local government to take aggressive steps in increasing the amount of municipal solid waste that is separated, processed and recycled, the local government should determine what policy of ownership of these facilities can best meet these goals (recycling goals). In establishing new facilities to accept mixed municipal solid waste or source separation materials, local government should determine how these facilities can meet their recycling goals. Economic, technical and operational analysis must be made to determine ownership.

This policy should be based upon an analysis of the existing capacity, the need for additional capacity, the ability and willingness of the existing capacity to expand to the size of the needed capacity, the ability to meet long-term needs, and the risks involved.

D. Ownership of Combustion Facilities

Ownership of combustion facilities, although not independent from the operation of the facilities, can be analyzed separately since both public and privately owned facilities can be operated privately. Furthermore, by using the full service approach (one vendor designs, constructs and operates the facility) many of the technological and operational risks can be shifted to the vendor no matter which party owns the facility.

The principal factor affecting the ownership of combustion facilities is economic. A privately owned facility can take advantage of federal tax benefits (in the U.S.) and take risks on merchant or spot markets that local government usually will not take, in order to offer lower early year tipping fees in the long-term contracts with local units of government. This early year economic advantage is offset in the later years since the private owner (rather than the local unit of government) owns the facility, and can charge market rates, which will be significantly higher than costs (especially after the initial debt to construct the facility has been retired).

Therefore, private ownership of combustion facilities obtains a short-term gain for the local government of lower early-year costs by sacrificing the longer-term economic benefits derived from ownership once the debt has been retired. Economically, the local government may be better off in the long term if it owns the combustion facility, but it must pay the price in the short term through higher initial costs.

Therefore, the local government jurisdiction must make a policy decision based upon an analysis of these costs and benefits that are weighed in terms of its own economic, political and social values.

E. Ownership of Disposal Facilities

There are several factors that guide the determination of ownership of disposal facilities. These are:

- financial assurance
- capacity assurance
- fair and equitably available capacity

1. Financial Assurance

Under pending US federal regulation; a number of existing state/provincial regulations; and certainly in many future regulations, the following financial requirements will dramatically affect who should own disposal facilities:

- financial assurance for closure
- financial assurance for post-closure maintenance
- financial assurance for post-closure monitoring
- financial assurance for remediation

In all of these instances, the ability for an owner to demonstrate such financial assurance and to assure an organizational entity for the mandated post-closure period and beyond is an absolute essential factor in ownership. It is because of the difficulties of demonstrating financial assurance by both public and private entities that SWANA has recommended that the preferred financial assurance option is a trust fund.

As long as financial assurance has been demonstrated, the ownership decision can be made independent of financial assurance considerations. However, if either the public or private sector can not demonstrate, or refuses to meet, the financial assurance criteria, then the decision of ownership clearly goes in favor of the party who is willing and able to meet those criteria.

2. Capacity Assurance

Through planning, local government must assure that there is sufficient capacity for all municipal solid waste generated within its jurisdiction for a defined period of time (thirty years is preferred). Conversely, if sufficient capacity cannot be accounted for within its jurisdiction, then through outside agreements, capacity outside of its jurisdiction must be assured.

In assuring capacity, local government must assure that such capacity will remain for the benefit of the public. In assuring capacity, local government has a responsibility to assure the public that the siting of landfills is for the public good, and that their interests will be protected. Consequently, local governments must be involved in the siting for all capacity permitted within its jurisdiction regardless of ownership.

In assuring capacity, local government must also assure regulatory compliance and mitigation of environmental impacts. Regulatory compliance must be strictly enforced and there should be penalties for noncompliance. Mitigation of known immediate environmental impacts should be dealt with through the state and local permitting process, and mitigation of future unknown environmental impacts is dealt with by having financial assurance.

The essence of capacity assurance is the siting and permitting of sufficient landfill capacity such that the local jurisdiction always has sufficient environmentally sound and economic disposal capacity available. This assurance of disposal capacity must be obtained through the use of an integrated municipal solid waste management plan. The use of publicly or privately owned capacity, or a combination of both, is a decision that the local jurisdiction must make through this planning process. In either case, appropriate constraints must be put in place to assure that the capacity will be available when it is needed, and that it can be replenished when required.

3. Fair and Equitably Available Capacity

Disposal facilities must equitably serve all public and private operations within its planned service area. If the disposal facility is publicly owned, this is assured since it is normally illegal for government to act in a discriminatory fashion.

If local government determines that they prefer private ownership of disposal facility capacity, then they should build into any agreement for a private facility within their jurisdiction safeguards to assure fair and equitable charges for all users of the facility. This can be accomplished in a number of ways. First, if a governmental body issues tax exempt debt to finance the facility, that governmental body can insist that a non-discrimination clause be included as part of the financing covenants that are made by the private company. Second, a non-discrimination clause can be included as part of any host community agreement between the local jurisdiction and the private company. Third, state/provincial legislation can require that such a provision be included as one of the state/provincial conditions for all disposal facilities. Fourth, through the integrated municipal solid waste management planning process, the local jurisdiction can establish a public body as a rate setting and enforcement mechanism. Additionally, these can be implemented to combinations to provide primary and backup assurance of equitable availability.

IV. SUMMARY

In summary:

- Ownership of transfer stations should be based upon ownership of the collection subsystem, the need for such facilities, and the economic or logistical benefits of such facilities.

- Ownership of processing/recycling facilities should be based upon an analysis of existing capacity, the ability and willingness of the existing capacity to expand to fill the needed capacity, the ability of any proposed capacity to meet long-term needs, and the risks involved in trying to fill the perceived needs.

- Ownership of combustion facilities should be based upon an analysis of the costs and benefits as weighed by the local jurisdiction's own value system through the local political process.

- Ownership of disposal facilities should be based upon an analysis of the ability to provide financial assurance, capacity assurance, and equitable service.

The provision of municipal solid waste management is a vital service to the public. The provision of such services can be accomplished by a myriad of management and ownership arrangements. Any and all approaches can be accomplished in a manner to protect the public interest, human health and the environment. It remains the responsibility of local government to determine how such services should be provided. It remains the responsibility of local government to decide who should own municipal solid waste management facilities.

Approved by the International Board
on September 25, 2009.

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International Secretary

Dated October 8, 2009

T-3.5
SWANA TECHNICAL POLICY

ENVIRONMENTAL JUSTICE AND EQUITY DECISIONS IN THE SITING OF MUNICIPAL SOLID WASTE MANAGEMENT FACILITIES

I. Policy

SWANA, as an organization of municipal solid waste management professionals, supports the following policy relative to the siting of municipal solid waste management (MSWM) facilities:

- Land use planning and local zoning rules and regulations should be the basis for siting municipal solid waste management facilities.

- Racial, ethnic, cultural or economic characteristics of a community or neighborhood should not be a reason to either justify, or deny, the siting of a municipal solid waste management facility.

- Siting decisions for municipal solid waste management facilities should be made based on science and actual impacts.

Once siting has been achieved, environmental rules and regulations should be used to assure the protection of human health and the environment when designing, constructing and operating municipal solid waste management facilities.

II. Discussion

Within the municipal solid waste management field, the siting of municipal solid waste management facilities including transfer stations, landfills, waste-to-energy facilities, compost facilities and materials recovery facilities (MRFs) foster debate on the question of environmental equity. This debate centers around charges that there is a perceived inequitable distribution of municipal solid waste management facility sites based on racial, ethnic, cultural or economic considerations. Whether valid or not, the perception of certain groups is that they are victims of environmental inequities due to the presence of MSWM facilities within their jurisdictions or neighborhoods.

SWANA does not support any policy that would use the racial, ethnic, cultural or economic characteristics of a community or neighborhood to justify the siting, or denial of siting, of a MSWM facility. SWANA, as a professional society, supports siting decisions that are based on science and technical land use and zoning conditions. These conditions should be the basis for siting MSWM facilities.

Further, SWANA believes that the following principles should be followed in the siting and presence of MSWM facilities:

- All municipal solid waste management facilities should comply with all applicable environmental laws and regulations. Local, provincial, state and national rules and regulations need to be followed in the design, construction and operation of all municipal solid waste management facilities.
- Open and informed dialogue between citizens, local governments and private service providers about municipal solid waste facility siting decisions should be faithfully pursued.

Approved by the Executive Committee on September 20, 1996.

Mark D. Hammond
International Secretary

Dated October 25, 1996

T-3.6
SWANA TECHNICAL POLICY

SOLID WASTE DISPOSAL BANS

I. BACKGROUND

Some units of government have implemented bans *or* otherwise restricted specific products, materials or a classification of a particular waste component from disposal in a solid waste disposal facility. Some of the items that have been banned include computers and electronic products, cathode ray tubes, tires, lead-acid batteries, landscape waste, motor oil, products containing metal, mercury, newspapers, beverage containers and other materials.

Solid waste disposal facilities are governed by laws, rules, regulations and standards whose goal is to ensure human health and environmental protection. These facilities, when properly designed and operated, can safely dispose of municipal solid waste. Disposal bans/restrictions are instituted, however, for a variety of reasons or needs that include the enhancement of waste diversion goals, or in response to a perceived risk to human health and environment.

It is SWANA's position that the implementation of a disposal ban or restriction should only be implemented when there is a legitimate need and when the product or waste component in question can alternatively be managed in a reasonable manner. In making this assessment, policy makers need to recognize that the integrated municipal solid waste system is a system made up of several elements including collection, diversion and disposal. Each of these elements must participate in the waste ban/restriction process.

Prior to implementing a disposal ban or restriction, the infrastructure must be in place to regulate, collect, store, transport, re-use, recycle or re-manufacture the banned or restricted material. A source of funding to implement alternative management must be identified and must not place an unfunded mandate on either the government and/or the owner(s) of the integrated solid waste system.

II. PURPOSE

The purpose of the policy on Solid Waste Disposal Bans is to establish guiding principles for SWANA and its members to use, in collaboration with legislators, interest groups, regulatory agencies and others, who have an interest in the management of the integrated solid waste system, when considering or developing a waste restriction/disposal ban.

III. ISSUES TO BE ADDRESSED IN IMPLEMENTING A SOLID WASTE DISPOSAL RESTRICTION OR BAN

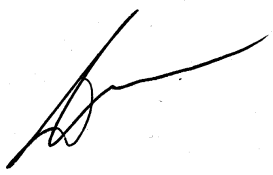
Prior to the implementation of a disposal ban or restriction, policy makers must clearly evaluate the proposal's rationale and all impacts to public health, the environment and cost. Policy makers must avoid placing unfunded mandates on local governments or the owners of solid waste disposal systems by implementing a waste ban and requiring the local governments to determine and provide the infrastructure. Policy makers should:

1. Identify the material to be banned/restricted, and explain why.
2. Consult with government, regulatory agencies, distributors, producers, generators, and representatives for the integrated solid waste system concerning its impacts, including effects on other jurisdictions.
3. Identify and quantify the potential impacts on the environment and human health of continuing to dispose of the product or material in existing disposal facilities
4. Identify alternative management methods to handle the reuse, recycling or disposal of the proposed restricted or banned product or material including:

- Availability of vendors to accept the materials and process for reclamation and re-use and in accordance with environmentally sound practices
- Demonstrated capacity to handle the estimated quantities of the banned/restricted material
- Infrastructure components required to separate the banned/restricted material, collect, store, and transport to sites for processing
- Ability to put infrastructure components in place prior to the initiation of the material ban/restriction
- Impact on the collection and transportation of the material to a site for processing and reclamation in accordance with regulations or recognized international standards

5. Determine the costs and how to distribute it for processing the restricted or banned material, and enforcing the ban.
6. Establish a mechanism to fund the alternative system requirements and to fairly allocate these costs to producers, distributors, retailers, consumers and solid waste managers.
7. Establish a mechanism to periodically review disposal bans or restrictions.
8. Establish a mechanism to temporarily set aside the restrictions or ban in order to alleviate an economic, public health or environmental emergency, created by an unforeseen situation.

Approved by the International Board on October 14, 2001.



Allen Lynch, International Secretary
Dated October 14, 2001

T-4
SWANA TECHNICAL POLICY

FUNDING, MANAGING AND OPERATING SOLID WASTE MANAGEMENT SYSTEMS

I. Policy

Funding, managing and operating solid waste management systems are interdependent. SWANA supports adequate funding and full cost accounting for solid waste management systems, and the funding of such systems through service and/or user fees, on an enterprise fund basis. Local governments and other responsible political subdivisions, consistent with the powers and limitations prescribed by state or provincial law, are responsible for planning and managing waste in a manner that protects public health, welfare and the environment. To accomplish this fundamental policy, local government/political subdivisions are responsible for the following:

- Planning and managing all solid waste generated within the jurisdiction of a local government, including oversight and regulation of private sector service providers;
- Utilizing private sector service providers when local government/political subdivisions determine that to do so is in the best interest of the public, institutions, industry and businesses; and,
- Developing adequate funding to accomplish the foregoing.

II. Introduction

The funding, managing and operating of solid waste management systems are important to their proper establishment and functioning. Solid waste management systems often require significant initial capital investment and dedicated funding for operations and maintenance, including the care of disposal facilities after closure. Local government has historically been the best entity to plan and manage solid waste management systems within their jurisdictions given the policy, economic and political importance. Indeed, the U.S. Supreme Court noted that '[d]isposing of trash has been a traditional government activity.' *United Haulers Ass'n v. Oneida-Herkimer Solid Waste Management Authority*, 550 U.S. 330, 334 (2007)

III. Discussion

Funding

Local governments/political subdivisions shall assure adequate funding of solid waste management systems through the following measures:

- the full cost of providing all services in an enterprise funded system should be paid for by the users of the system;
- full cost accounting of solid waste management systems, whether services are provided by public or private entities, should clearly identify each cost and revenue center to fully document the cost and revenue for each activity, service and management method;
- full cost accounting must include internal funding liabilities, such as insurance, vehicle maintenance, and all costs are incurred by other agencies not explicitly responsible for solid waste management; and,
- service fees should reflect the scope of services offered which may be related to the quantity and type of the solid wastes generated.

Managing

To carry out their traditional and legally delegated responsibilities, local governments/political subdivisions must:

- plan for environmentally and economically sound solid waste management within their jurisdictions;
- establish and implement public policies for solid waste management;
- assure that systems, facilities and services meet federal, state/provincial standards which protect human health and the environment;
- exercise control and make the decisions relative to how solid waste is managed within their jurisdictions;
- assure that provincial/state governments empower local governments to assure environmentally and economically sound solid waste management within their jurisdictions;
- assure the establishment of safe, reliable, efficient and reasonably priced systems;
- establish plans, ordinances, guidelines, standards and licenses for the delivery of services;
- determine the allocation of ownership and operations of services, systems, and facilities based on a competitive process;
- provide private sector service providers the opportunity to participate in the planning for solid waste management systems where appropriate;
- ensure that a competitive process is in place to make decisions on the delivery of services; and,
- ensure that services are established by a fair, equitable and competitive process where private sector waste service providers are utilized for services, systems or facilities.

Operating

The solid waste management system shall be operated under the direction and supervision of local government or other appropriate public agency or political subdivision, which shall determine, among other things, the extent to which service shall be provided by public employees, private sector service providers, or a combination thereof. The system shall be environmentally responsible, economically sound, and compliant with state and provincial laws and regulations. If and when private sector operators are engaged, their services shall be procured through a fair, open and competitive process.

Approved by the International Board on November 18, 2011.

Brian Tippette

International Secretary
November 30, 2011

SWANAPOLICY\T-4 11/11

T-4.1 (formerly T-11)
SWANA TECHNICAL POLICY POSITION

CONTRACTING MUNICIPAL SOLID WASTE MANAGEMENT SERVICES[1]

I. INTRODUCTION AND BACKGROUND

Municipal solid waste management is a public service that protects human health and environmental quality. Local agencies are responsible for providing that protection and therefore should plan for, exercise control over, and make the decisions as to how municipal solid waste is managed within their jurisdictions. (T-3.3 SWANA Technical Policy "The Role of the Public Sector in the Management Of Municipal Solid Waste"). However, local agencies need not provide services with municipal employees or municipally owned solid waste management facilities. Any or all solid waste management services can be provided by myriad permutations of public / private ownership arrangements. It is the responsibility of local agencies to determine how - and by whom – municipal solid waste services are provided. (T-3.4 SWANA Technical Policy "Ownership of Municipal Solid Waste Management Systems").[2]

II. CONTRACTING AND PROCUREMENT POLICY

If a local agency determines not to provide municipal solid waste management service with its municipal employees but rather by contract with another party (whether private, non-profit or the public sector), then the local agency should solicit proposals and award contracts:

- in a manner that ensures a fair, open and competitive process;
- in accord with state, provincial and local law, and consistent with the local agency's integrated waste management plan or strategy; and
- in substance that protects human health, the environment and the public interest (including public funds).

[1] "Services" includes waste management services provided by private, non-profit, or public sector contractors at their facilities or with their equipment, and operation of publicly owned facilities by private, non-profit or public sector contract operators.

[2] For a definition of municipal solid waste, see T-0 SWANA Technical Policy "Definitions of Terms Used in SWANA Technical Policies and Solid Waste Management" and for a description of municipal solid wastes systems, see T-3 SWANA Technical Policy "Strategic Planning for Integrated Municipal Solid Waste Management".

III. CONSIDERATIONS

The following check lists enumerate *suggested considerations* on four aspects of contracting for integrated municipal solid waste management services:

A. ESTABLISHING CONTRACT PROCUREMENT RULES,
B. PRESCRIBING PERFORMANCE SPECIFICATIONS AND STANDARDS,
C. STRUCTURING THE BUSINESS DEAL, and
D. ADMINISTERING AND ENFORCING THE CONTRACT.

The check list of considerations is not prescriptive, but a menu of options to review, implement or reject, based on local political, economic and legal constraints. Local, state and provincial agencies often are subject to contracting and procurement law and regulation that varies from jurisdiction to jurisdiction. Local agencies should review applicable law and regulation prior to commencing procurement, and before implementing any of these considerations, they should consult with their legal counsel.

A. ESTABLISHING CONTRACT PROCUREMENT PROTOCOLS

Competitive procurement. Where practically possible, local agencies should competitively procure contracts in order to secure the best possible service for the lowest price with the most advantageous contract administration and enforcement provisions.

Procurement team. Depending upon the size and complexity of the procured contract as well as the expertise of the local agencies' staff, consider securing professional technical and legal services from qualified engineers, financial analysts, management consultants and lawyers to assist with the contract procurement process.

Competitive Proposal Process.

1. **Expressions of Interest.** Local agencies that plan to issues RFPs instead of conducting sole source negotiations (for example, to extend or renew existing contracts), may consider first issuing requests for expression of interest. Expressions of interest help local agencies identify who might submit proposals, ascertain whether there will be keen competition, and determine whether to implement the two-step RFQ-RFP process described below.

2. **Requests for Qualifications.** Where many potential proposers express interest in a procurement, local agencies may consider dividing the procurement process into 2 stages: first, a Request for Qualifications (RFQ), followed by a Request for Proposals. However, they should establish clear minimum qualifications in order to reduce grounds for contest by proposers who are disqualified. RFQs enable local agencies to select (or short list) a limited number of firms that meet the minimum qualifications and include only the firms that the local agencies would like to submit proposals.

3. **Request for Proposals.** Although local law may require that services should be competitively bid and awarded to a lowest responsible bidder, if law allows otherwise, local agencies should competitively procure solid waste service contracts through a request for proposal process (RFP). RFPs allow greater flexibility to award contracts based not only on proposed quantitative contractor compensation but also on qualitative factors such as proposer's experience and references; litigation history; environmental records; acceptance or rejection of proposed service contract terms, financial creditworthiness, proposed program implementation, safety record, etc.

Prior to requesting submission of proposals, consider distributing the draft RFP (and contract) to potential proposers and solicit their questions or comments, in writing and/or in meetings. Potential proposers can identify costly service specifications and flag onerous business terms that might prevent them from submitting proposals. Accept or reject comments and finalize the draft final RFP (and contract) that will serve as the basis of proposals.

Requests for Proposals should: include the following provisions, at a minimum, although protocols may vary:

- Articulate any **minimum qualifications** of potential contractors that must be met before the local agency will evaluate the proposal. (Examples include minimum experience and financial qualifications.)
- State project goals and describe project approach or implementation needed, including whether there is flexibility for potential contractors to be creative or provide options.
- State objective **evaluation criteria**, which may be listed generally or accorded specified weight, such as price 30%, experience 30%, acceptance or rejection of proposed service agreements 20%, litigation history, environmental record etc. 10%, financial creditworthiness 10%.
- Outline a method for checking proposer **references** and performing due diligence on any proposer to verify the proposer's ability to provide the level of services envisioned by the procurement process. Consider requiring proposer to submit **operations details** (such as labor assumptions, equipment acquisition) in order to corroborate that the proposal price is realistic and will be honored.
- Provide as much service **background data** as possible to enable proposers to more accurately estimate their costs and consequently propose prices with smaller margins of error. For example, with respect to a collection procurement, provide refuse, recyclables and green waste tonnage; number of single family residences, multi-family units, commercial accounts; demographic or socio-economic profiles and population growth projections; waste characterization, special requirements (such as City facility service, carry-out, hilly or narrow streets or alleys), etc.
- **Reserve rights** to clarify or amend the RFP and to reject any or all proposals. Make clear that proposers cannot seek reimbursement for their proposal submission costs from the local agency.
- Consider whether to require a **proposal bond**, and if so, what amount would be appropriate to cover local agency's costs if the proposer does not timely execute an agreement, yet would not discourage potential proposers from submitting proposals. (This may depend on the projected revenue value of the contract.)

- Consider whether to require a mandatory **pre-proposal conference**, which may assure that all potential proposers receive the same information about the procurement process, but which also may inflate proposal prices if proposers see that potential competition did not attend the conference. Regardless, require that all correspondence be written and preferably made through a single designated person.
- Consider requiring that prices be submitted separately from qualifications.
- Consider conducting interviews to ask questions about proposals, clarify RFP provisions, evaluate professionalism of key personnel, etc.
- Consider adopting **contact constraints** that identifies a single person who proposers may contact and provides for **process integrity**.
- Include the form of **proposed contract** with the RFP in order to fully disclose business risk allocation (such as changes in law, labor disturbances, acts of God etc. that may excuse contractor's breach; indemnification) and performance assurance (such as insurance, performance bonds / letters of credit, and parent guaranties) that may impact price proposals and avoiding lengthy contract negotiations after selection of a proposer. Make acceptance or rejection of contract terms an evaluation criteria.
- Provide support for **facility designation**, where appropriate or necessary.
- Some local agencies require contractor reimbursement for consultant or government time to execute the procurement process, although others believe this is not appropriate.

4. **Contract negotiations.** RFPs (as opposed to bids) allow for best-and-final offers and negotiation, including simultaneous negotiations with more than one proposer.

B. PRESCRIBING PERFORMANCE SPECIFICATIONS AND STANDARDS

1. **Customer responsiveness / legal requirements.** Local agencies should ensure that the service specifications and standards meet the needs of the identified waste generators and demands of law. Local agencies may hold public workshops or hearings to solicit customers' (or facility neighbors') concerns and requests.

   The considerations below are examples and not exhaustive.

2. **Fundamental contract provisions.** Municipal solid waste contracts should include the following provisions, at a minimum:

   - definitions of **terms**, which can reduce ambiguity, avoid argument and resolve disputes.
   - **contractor's responsibilities and rights**
   - **local agency's responsibilities and rights**. Consider that in many contracts, the local agency's only contract obligation is limited to paying compensation from an enterprise fund (although in other instances, compensation is a general fund obligation)
   - **performance specifications and standards**, including in emergencies and catastrophic events
   - **contract administration tools,** such as contractor record keeping and reporting,

contractor responsiveness standards (see subsection D below)
- a variety of **enforcement** rights and remedies that allow the local agency to get what it bargained for, short of terminating the contract (see subsection D below)
- **performance assurance** that is liquid and allows the local agency quick access to money in events of contractor nonperformance and threats to health and safety, such as letters of credit and corporate guaranties.

3. **Collection service specifications: refuse, recyclables, green waste.** These contracts should include provisions such as:

- type of customers (such as residential, commercial, multi-family, institutional, governmental)
- identification of acceptable materials (such as refuse, types of recyclables, types of green waste of specified dimensions)
- service days and hours
- customer container options
- special services like community cleanup, bulky waste / universal waste pickup (and non-collection rights for excess set-outs), Christmas tree collection, roll-out / push-out service
- public education program obligations
- container delivery, exchange timing
- complaint resolution protocol (including missed pickups)
- diversion requirements
- customer billing (if done by the contractor)
- customer service (including office, staffing, phone protocols)
- customer service charge structures (such as unit-based charges) / rate regulation
- collection crew clothing and behavior standards.

4. **Facility-related specifications.** Contracts for services at facilities (such as recyclable or compostable material processing or refuse disposal), or for private operation of publicly owned facilities (such as MRFs, composting facilities, landfills or WTE facilities), should include provisions such as:

- receiving hours
- vehicle tipping / turnaround guaranties
- weighing protocols (including scale house operation, fee collection / security)
- throughput capacity guaranty
- identification of acceptable materials and hazardous waste load checking protocol (including responsibility / protocol for handling and paying for hazardous wastes and processing residue)
- utility consumption guaranties (if local agency pays utility charges)
- routine and extraordinary maintenance, repair and replacement of publicly owned equipment and facility.

5. **Transfer and transport service (and facility operation) specifications:** In addition to facility-related requirements listed in item 2 above, these contracts should include

provisions for truck, rail haul and barge transport variations such as:

- weighing and waste loading protocols for transfer trucks / containers
- container availability and on-site storage limitations
- container checks-and-maintenance
- backup service in event primary mode or route is unavailable.

6. **Recyclables, C&D debris and compostable materials processing and marketing service (and facility operation) specifications.** In addition to facility-related requirements listed in item 2 above, these contracts should include provisions such as:

   - waste characterization preconditions and reject limits
   - recovery / residue guaranties and residue management
   - marketability guaranties
   - product specifications
   - materials marketing obligations (including market risk allocation)
   - performance (recovery) incentive (recovered materials revenue sharing options)
   - data collection and reporting
   - rebate requirements for materials delivered by haulers to the facility.

7. **Disposal service (and facility operation) specifications:** In addition to facility-related requirements listed in item 2 above, these contracts should include provisions such as:

   - landfill compaction guaranties, including measurement protocols, (for publicly owned landfills)
   - landfill designated cell disposal
   - waste handling requirements in wet weather
   - steam / electricity production guaranties for WTE facilities)
   - pollution liability (including CERCLA) indemnifications.

8. **Special waste service (and facility operation) specifications:** In addition to facility-related requirements listed in item 2 above, these contracts should include provisions such as:

   - recycling obligations
   - disposal / incineration designations
   - packaging maximization
   - household generator / CESQG status verification.

9. **LFG development specifications:** In addition to facility-related requirements listed in item 2 above, these contracts will be specific to landfill and the project. They should include provisions such as:

- milestones for several steps in the development of the project.
    i. Date of Go/No Go decision
    ii. Date of utilization facility start-up
- developer's responsibilities and rights
- landfill owner's responsibilities and rights
- royalty on gross sales of energy or payment for LFG sale
- responsibility for measurement of energy sales
- ability to audit measurement of energy sales
- who retains tax credits
- who retains green house gas credits, renewable energy credits or other environmental credits
- ownership of LFG system.
- ownership of unused LFG.
- responsibility for operation, monitoring and maintenance of the LFG collection system
- responsibility for LFG surface emission monitoring, corrections and reporting
- responsibility for LFG migration
- responsibility for adding LFG extraction devises in new fill areas
- responsibility for Title V report costs and preparation for utilization facility
- performance specifications and standards, including in emergencies and catastrophic events
- contract assignment, termination and decommissioning of plant, pipeline, well field.

10. **Facility development agreements (MRFs, composting site, transfer station, landfill, etc.):** Development specifications should include provisions such as:

- preconditions like site acquisition
- acceptable financing
- permitting by specified date
- allocation of development obligations (such as site assessment/mitigation, design, permitting and construction)
- approval of plans-and-specifications and change order protocol
- public bidding and construction management (if required; see Section A2 RFP, above)
- acceptance testing protocol
- liquidated damages for delayed acceptance (buy-down of performance obligations).

C. STRUCTURING THE BUSINESS DEAL

Municipal solid waste service contracts should include the following business provisions, at a minimum:

1. **Term** including extensions rights / obligations, and whether they are unilateral (local agency) or bilateral (mutual) options, or a contractor right that can be earned through performance. Consider also termination rights, such as no-fault termination for convenience, especially in competitive procurements where the buy-out amount can be proposed. Specify obligations that survive the term (such as indemnifications, certain reporting requirements, etc.).

2. **Compensation** and **compensation adjustment** methodologies (such as single index or bundled indices, or cost-based), which may be related to term, and reasons to re-visit rates (such as changes in law, program modifications, changes in passed through costs like disposal tipping fees in a collection contract); performance incentives {for example, base compensation plus up (or down) sharing of market risk; increases/decreases for meeting prescribed recycling diversion levels]

3. Local agency (dis)approval rights with respect to key personnel and contract delegation and **assignment** (including sales, mergers, bankruptcy, transfer of ownership, etc.).

D. ADMINISTERING AND ENFORCING THE CONTRACT

Municipal solid waste service contracts should include the following administration and enforcement provisions, at a minimum:

- Performance and **operational record keeping and reporting**, for ascertaining performance under the contract and effectiveness of programs.
- **Financial record keeping and reporting** (including for related parties or affiliates that provide goods or services) where necessary for cost substantiation / rate adjustment.
- **Contractor response obligations**, such as time to return the local agency's calls, answer the local agency's correspondence, etc.
- Local agency's **access to facility** and inspection protocols.
- **Performance (dis) incentives**, including compensatory and / or liquidated damages that serve as an intermediary remedy short of contract termination.
- **Criminal conduct clause (*who* is a bad actor, *what* is a bad act and *where* the bad act must occur)**.
- **Breaches** and time-limited cure rights for breaches that can be remedied; itemized **defaults**; **remedies** (including specific performance / injunction relief for waste delivery requirement); related notice periods.
- **Dispute resolution and enforcement options** (such as judicial, mediation, arbitration and modifications of standard arbitration rules to address public health and safety concerns with respect to putrescible solid waste).
- **Representations and continuing warranties**.

- Choice of **performance assurances** (such as performance bonds or more liquid letters of credit, parent company guaranties).

Approved by the Executive Committee, Silver Spring, Maryland, after due review and comment by all Chapters and members of the IB.

CERTIFIED to be correct and complete statement of the matters duly approved by the Executive Committee on.

Sara Bixby, International Secretary

Dated November 28, 2007

T-4.2
SWANA TECHNICAL POLICY

FULL COST ACCOUNTING FOR MUNICIPAL SOLID WASTE MANAGEMENT SYSTEMS

I. Policy

SWANA supports the establishment of full cost accounting for municipal solid waste management system(s) (MSWMS).

a. Full cost accounting should provide to the public, policy makers and managers of MSWMS a clear statement of all the costs of a MSWMS.

b. Costs for various components of a MSWMS should be separately accounted for and disclosed.

c. Users of the MSWMS should know the system costs, and those costs should be reflected either by user fees or on a tax statement.

d. In a MSWMS funded as an enterprise activity, the full costs reported to the users of the systems should be the basis for establishing fees. Such fees must benefit all users of the system and should be equitable in their application.

e. Full cost accounting must include all direct and indirect costs necessary for a MSWMS to deliver all the services identified in the MSWMS plan.

   When MSWMS are competitively bid with private sector service providers, the competitive bid (service fee) becomes the cost for purposes of full cost accounting.

Full cost accounting therefore provides an understanding of the various cost components of a MSWMS. Through this understanding, the public, policy makers and managers can make informed decisions, knowing fully what resources are needed to successfully provide MSWMS services.

II. Introduction

The revenues and expenses of MSWMS are complex and varied. Assigning costs for MSWMS is an important part of the financial structure of a MSWMS. Sound decision-making must be based upon knowledge of the full costs of MSWMS. Neither policy makers nor the public can be expected to evaluate and make critical decisions if they do not have access to the costs associated with system alternatives. Only through careful accounting procedures can costs be assigned. Appropriate accounting methods for cost accounting and utility fund management are described in the Government Accounting Standards Board (GASB) Statement 34.

III. Discussion

Full cost accounting is a process of collecting and presenting all costs incurred in implementing a MSWMS. It is an accounting procedure that includes both direct costs associated with a particular MSWMS and indirect costs such as future liabilities and shared service costs. These costs include service fees paid to private contractors.

The costs for planning, designing, financing and operating MSWMS occurs at each step in the process. In addition, costs occur beyond the actual operation of a MSWMS. For example, marketing costs may occur to divert recyclables to the secondary materials market. Post closure costs occur after municipal solid waste is disposed in landfills or the ash is disposed after MSW is combusted, and those landfills are closed.

Both MSWMS revenues and expenses need to be identified and understood. Revenues may come from taxes, user fees, service fees, energy and materials sales, grants, and many other sources. Expenses for MSWMS may include salaries and wages, employee benefits, professional and technical services, capital, financing, insurance, regulatory compliance (permits, fees), fuel, building and equipment maintenance, equipment renewal and replacement, education and outreach, indirect and overhead costs, building and equipment decommissioning, and site closure and post closure care and monitoring.

If local governments are to adequately finance each step in the process of successful MSWMS, all of the revenues and expenses mentioned above must be understood. If private MSWMS service contractors are to provide MSWMS services, their fees have to be based on all costs associated with their share of the MSWMS services. The assignment of costs to a MSWMS should establish the basis for funding to meet those costs by a variety of funding means.

Local governments should utilize full cost accounting and should report to the public all costs and revenues from all sources and how they are allocated to the MSWMS. If MSWMS service contractors are utilized, the rates charged by the contractors should be based on full cost accounting and should be set by the competitive process. Costs for various components of a MSWMS should be separately accounted for and disclosed where possible, i.e. collection, recycling, transfer, combustion, landfilling, etc., and should be identified as cost and revenue centers so that the users fully understand the economics of the MSWMS.

MSWMS that are funded by taxes can, and often must, provide a full accounting for their budget. In some instances, the generator is taxed for MSWMS services, and those costs are identified separately on the tax bill. This approach clearly informs the users of the MSWMS of the costs for the delivery of MSWMS services.

When MSWMS compete for public dollars, it is essential that public policy decision makers dictate that those responsible for MSWMS develop and establish a process to identify the full costs of services provided. The public is entitled to know about and participate in this process. Through this process the public becomes aware of the full cost for a MSWMS.

If full cost information is not available, planning and implementation will be impeded, and further, may result in uninformed decisions. Consequently, regardless of the methods utilized to fund and finance a MSWMS, full cost accounting is essential.

Approved by the International Board
On August 29, 2012

Michelle Leonard
International Secretary

Dated September 6, 2012

T-5: Regulation of Solid Waste Storage, Collection, and Transportation

SWANA TECHNICAL POLICY T-5:
REGULATION OF SOLID WASTE STORAGE, COLLECTION, AND TRANSPORTATION

Words marked with asterisks (*) are defined in SWANA Technical Policy T-0.

Background

Solid waste management – and particularly solid waste storage, collection, and transportation – has traditionally been the responsibility of local governments. (See *SWANA Technical Policy T-3.3 Role of the Public Sector in the Management of Solid Waste*, IIIA Position). In general, solid waste generators must comply with storage requirements, and municipal, commercial, and self-haulers must comply with collection and transportation requirements. Local governments fulfil their responsibility to manage solid waste by exercising their police power to protect public and environmental health, individuals' safety, and provide convenient, reliable, and affordable collection and transportation services. Many states/provinces mandate or set goals for waste diversion.

This Technical Policy discusses solid waste aspects of solid waste storage, collection, and transportation that many state/provincial and local governments already include in their programs. It concludes with SWANA's policies that summarize and succinctly re-state hose practices.

Discussion

Discard and Storage. Waste "generators" are individuals and entities that produce and discard municipal solid waste*, including household* (residential), industrial* and institutional* waste. State and provincial governments prescribe generators' (*or their haulers'*) obligations and standards for discarding and storing waste, and local governments set more detailed requirements. Common, current examples follow:

(1) Technical

- **Container or bag specifications:** manual/automated (*front end loaders*, side loaders**), water-tight, vector-resistant, recycled content, set-out instructions (*distance between containers, contained/bagged or boxed*), color and labeling (*discard prohibitions, list of recyclables, scavenging prohibitions*); meeting applicable OSHA, CSA, and ANSI standards
- **Sites**: space for recyclables containers (*such as in multi-family dwellings and alleys)*; access (*handicapped, commercial haulers*), and materials specifications (*such as concrete pads for bins or dumpsters*)
- **Bans**: such as disposing recyclables*, organic* or green waste*, yard debris* or food residuals* commingled with garbage*. (See *SWANA Technical Policy* T-*3.6 – Solid Waste Disposal Bans*, Technical Policy T-6 Recycling as Part of Waste Management, with respect to enforcement of bans.)

(2) **Sanitary**:especially with respect to putrescible waste (garbage*) that attracts vectors: manner and (*covering/containment*), length of storage/collection frequency (*especially organic waste*), container size/capacity (*adequacy)*, cleaning, repair; and discard prohibitions (*dead animals, medical waste**).

(3) Safe: placement (*not blocking pedestrians and traffic*), distance from buildings (*fire-prevention for non-putrescible flammable waste*); discard prohibitions (*hazardous wastes*, sometimes electronic wastes (E-waste*), universal waste** (such as batteries, pesticides, thermostats, mercury-containing lamps) *and, pharmaceuticals**), and special discard instructions, such as packaging air-borne materials (*vacuum dust, sawdust, cat litter, ashes*) or sharp objects (*glass, needles, sharps**)

(4) Aesthetic: enclosed storage, visibility from street, time of set-out and take-back; bulky waste* collection rules; packaging ("*popcorn*"); odor (*no placement near doors, windows, or ventilating intakes, especially with respect to commercial waste*), litter clean-up requirements at set-out sites, bear-proof containers).

RECENT DEVELOPMENT: Weekly Collection. States, provinces and local governments are reconsidering minimum storage and collection requirements. Traditionally, they required generators (*or their haulers*) to dispose of mixed waste (putrescible *garbage** and non-putrescible *refuse**) at least weekly, for health reasons. However, they are setting diversion mandates* and diversion goals* to divert organics* – and particularly food waste* (residuals*) – from disposal. Many local governments struggle to provide additional funding for new programs: collecting segregated food waste* in addition to solid waste, recyclables* and green waste*. Some consider reducing costs by collecting recyclables* and non-putrescible yard waste* collection to bi-weekly instead of weekly, but the existing law and regulation may prohibit it. Local governments consider location, climate, weather, and waste stream of local governments when determining collection frequency. Collecting materials less than weekly may require changes in state/provincial regulations and local ordinances.

Collection

Mandatory Collection Service. Some local governments require that every generator subscribe to waste collection service or pay for the service (*for example, on a municipal utility bill or as part of property tax*). This assures waste management funding, increases route efficiency, and lowers costs (*for example, with one residential hauler*). It can allow local governments to direct disposal, recycling, or other diversion to specified facilities, either by regulation or contract/franchise*, in accordance with law regarding "flow control"*. It can improve local governments' financial credit when they collect service fees on utility bills and can discontinue water or power for delinquencies, or lien affected property. See also SWANA Technical Policy T-6 Recycling as Part of Waste Management, with respect to mandatory recycling.

Waste Haulers

Licensed, Permitted, Contracted/Franchised. Local governments license, permit, contract/franchise* waste collectors in the private sector (*commercial haulers*). Programs may be:

- non-exclusive (*open market competition*)
- semi-exclusive (*limited to a specified number of haulers*) or
- exclusive

They charge permit or license fees (*reimbursement of program administration, street wear-and-tear*), and franchise* fees (*consideration for awarding a hauler an exclusive monopoly to provide services)*. Franchise* fees are a cost of doing business, just like fuel, wages, and depreciation.

Licenses, permits and contracts/franchisees contain varying details of program requirements and service standards, dependent in part on whether customers can choose their waste hauler and easily switch services if they are dissatisfied. Licenses and permits also provide for local government program administration and enforcement options.

Collection Contracts. Some local governments provide municipal collection service and others contract with private entities. (See *SWANA Technical Policy T-3.4 Ownership of Municipal Solid Waste Systems*, I Introduction, IIB2 Position/Collection.) Contracts include basic (*garbage and refuse; often recyclables and yard waste*) and special services (*such as bulky waste collection)*; collection schedules, customer service (*complaint resolution, container repair, billing disputes*), public education, diversion requirements, and probably rate regulation/adjustment. (See *SWANA Technical Policy T-4.1 Contracting for Solid Waste Management Services*, IIB3 Collection service specifications: refuse, recyclables, and green waste.)

Contract Procurement. See *SWANA Technical Policy T-4.1 Contracting for Solid Waste Management Services SWANA T-11,* II Contracting and Procurement Policy. It discusses procurements, including competition, process minimum qualifications, evaluation criteria, etc. SWANA takes the position that local governments should procure private, solid waste management services competitively. (*SWANA Technical Policy T-3.3 Role of the Public Sector in the Management of Solid Waste*, IIIJ Position.)

Vehicles. Local governments set vehicle requirements with respect to:

- technology (*front end loaders*, side loaders,* dedicated use, identification, CNG fueling)*
- sanitation (*water-tight/leak-proof, equipped with absorbent for spills; fire extinguisher)*
- safety (*back-up alarms, cameras; compliance with explicit laws regarding such as smog checks, tires, lights, registration, and weight limits)* and
- aesthetics (*equipped with broom for litter, covered or closed compartments; washing schedules, painting*)

Increasingly, states and provinces (*or specifically their air boards*) require that waste collection vehicles meet prescribed fuel and emissions standards (*retro-fit or new acquisition*) and fuel use (*such as CNG*).

Transportation. Federal, state/provincial, and local governments regulate several aspects of transporting waste, including road weight limits and distribution, and prohibiting leaks, spills, blown litter (*covering with tarps, enclosed truck body)*

II. Policy Position

SWANA supports the following policies to ensure sanitary, safe, convenient, efficient, and affordable solid waste management, in compliance with law:

Discard, Storage, Collection, and Transportation

(1) Plan Standards & Requirements: State and provincial governments should establish general standards and requirements for disposal, storage, collection, and transportation (*such as minimum service frequency*).

(2) Plan Development: Local governments develop specific standards, requirements and integrated waste management plans that include storage, collection, and transportation services.

(3) Plan Implementation & Enforcement: Local governments should implement plans and enforce legal requirements/performance standards to assure storage, collection, and transportation of municipal solid waste is rapid and reliable.

Discards

(1) Acceptable/Permitted Wastes. Generators can discard only municipal solid waste, not hazardous or medical waste in solid waste collection containers.

(2) Mandatory Recycling/Disposal Bans. State, provincial and local law may also prohibit discard of other wastes, such as scrap tires, yard waste, e-waste, or recyclables and organics (food waste) in garbage* containers (bans).

Storage

(1) Containers. Containers should be leak-proof, covered and compatible with selected collection method and programs (*design, size, colors*). They should display printed discard and set-out instructions. Local governments should establish standards for cleaning and repairing containers.

(2) Collection Frequency. Generally, organic wastes* that are putrescible (*such as food and green/yard waste*) should remain stored on premises for no more than one week. Non-putrescible waste (*such as source separated recyclables*) may remain stored for no more than two weeks. However, local climate, weather, customers, and other variables might justify bi-weekly collection of organic wastes*.

(3) Storage Locations. Local governments may require generators to store containers from public view. State, provincial or local law may mandate that multi-family or commercial buildings provide space to store recyclables containers, store certain flammable wastes no closer than prescribed distances from buildings, and install impermeable surfaces (concrete).

Collection

(1) Set-Out/ Take-In. Local governments may require generators to place containers at specified locations and in a prescribed manner, and to set-out and remove containers within a certain time of collection.

(2) Mandatory Collection. Local governments may mandate collection to assure stable funding, establish credit, reduce costs, and control waste stream, as allowed under law.

(3) Regulation v. Agreements. Local governments may choose to establish program specifications, service standards and compliance/enforcement either by license, permit, or contract/franchise*, as allowed under law.

(4) Public/Private. Local governments may provide waste management services themselves or though the private sector.

(5) (Non / Semi) Exclusive. Local governments may provide non-, semi- or exclusive service as a matter of local discretion (if allowed by law).

(6) Automation. If feasible (considering *hills, cul de sacs, weight-bearing pavements etc.*), local governments should provide automated solid waste collection services to the maximum extent possible, where feasible.

Transportation.

(1) Litter and Leaks. Local governments should prohibit transporters of solid waste from littering or leaking materials on streets via contract, license, or ordinance, and require them to carry equipment for cleaning up litter and leaks.

(2) Routing. Local governments can consider traffic, noise, road maintenance and other truck impacts when establishing routing requirements but should also consider cost consequences.

Approved by the International Board on
April 22, 2017.

Michael Greenberg, International Secretary
Dated April 22, 2017

T-5.1
SWANA TECHNICAL POLICY

IMPORTATION AND EXPORTATION OF MUNICIPAL SOLID WASTE

Policy

The Solid Waste Association of North America supports the principle of free movement of municipal solid waste across jurisdictional boundaries as an article of commerce irrespective of origin, subject to traditional state, provincial and local government responsibilities listed below.

Position

Definitions

The shipment of municipal solid waste (MSW) across jurisdictional boundaries for purposes of treatment, recycling, recovery or disposal has become very prevalent in North America. Decisions on the importation and exportation of municipal solid waste is an issue that will be faced by many governmental entities. This policy establishes SWANA's position on the issue of importation and exportation of MSW.

For the purposes of this policy, the following definitions will be used:

- ***Importation*** -- The receipt of municipal solid waste at a public or private owned facility from a source outside the jurisdiction in which the receiving facility is sited

- ***Exportation*** -- The shipment of municipal solid waste from a jurisdiction to a public or private owned facility in another jurisdiction

The term "jurisdiction", as used in relationship to a local government institution, means the geographical or territorial limits in which state or provincial governments empower a local government institution to exercise their authority.

Responsibilities of State and Provincial Governments

With respect to solid waste importation and exportation across jurisdictional boundaries, state and provincial governments should:

1. Enact laws and promulgate regulations for solid waste management that protect the environment and provide for public health, welfare and safety. These include requirements for financial responsibility for environmental consequences and requirements to deal with transportation-related impacts.

2. Develop and implement state, provincial, or regional solid waste management plans that provide for the safe and environmentally sound management of solid waste. These plans should specify the size, type, capacity and location of solid waste transfer, recycling, treatment and disposal facilities.

3. Develop and implement state and provincial economic development plans that address issues such as siting and location of solid waste management facilities and projects so they are consistent and compatible with resources important for economic development (e.g. historical sites and recreation areas)

4. Develop and implement a permitting process that carries out state and provincial laws, regulations and plans, and provides for public participation that allows affected parties and impacted communities to voice their interests

5. Delegate authority to local governments to plan, develop, implement and approve solid waste management facilities and projects

Responsibilities of Local Governments

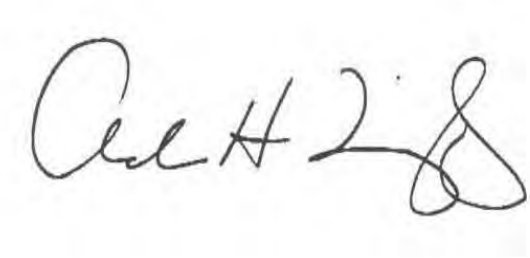
With respect to solid waste importation and exportation across jurisdictional boundaries, local governments should:

1. Plan, develop, construct, operate, approve and/or contract for solid waste management facilities and projects that protect the environment, and public health, safety and welfare

2. Negotiate and enter into host agreements, including fees and other terms and conditions, with owners and operators of solid waste management facilities and projects

3. Establish local zoning and land-use requirements that mitigate the impacts of transport, handling and disposal of solid waste

Approved by the Executive Committee on October 10, 2003



Andrew Quigley
International Secretary
Dated October 10, 2003

T-5.2
SWANA Technical Policy

FLOW CONTROL OF MUNICIPAL SOLID WASTE

Policy

SWANA recognizes flow control as an effective and legitimate instrument of integrated municipal solid waste management. To the extent allowed by law and after public discussion- including the consideration of economic, environmental and social impacts, and input from residents, businesses, and other interested parties- flow control can be implemented without unduly interfering with free movement of municipal solid waste and recyclables across jurisdictional boundaries.

Position

Introduction

As importers, exporters, or sometimes as both, local governments and waste authorities throughout North America participate in the transportation of municipal solid waste across jurisdictional boundaries for treatment, recycling, energy production, and/or disposal. Some jurisdictions find their interests are best served by local solutions to waste management obligations, including the designation of local facilities for municipal solid waste handling or disposal.

Background

Flow control is a regulatory measure, typically a local governmental ordinance, rule or other official directive, requiring that municipal solid waste, recyclables, or other material be transported from the place where the material is generated to a designated facility for processing, recovery, transfer, energy production or disposal.

In *C&A Carbone v. Town of Clarkstown*, 511 U.S. 383 (1994), the U.S. Supreme Court struck down a law requiring all nonhazardous solid waste within the town limits, whether or not locally generated, to be transported to a town-designated, but privately owned and operated, waste processing facility. The town hired a private contractor to build a transfer station and operate it for five years, and to assure a sufficient flow of waste to the facility, passed the flow control measure. The high court found the town law discriminated against interstate commerce by bestowing a favored status on the single local waste processor and depriving competitors, including out-of-state firms, of access to a local market.

Following the Carbone ruling, some local governments were able to achieve similar results (that is, steering waste to a preferred facility) without flow control. They relied on competitive and negotiated contracts with haulers, franchising systems, and competitive pricing. The courts found these alternative approaches non-discriminatory, and upheld them if local benefits from facility designation outweighed effects on interstate commerce.

In *United Haulers Association v. Oneida-Herkimer Solid Waste Management Authority*, 127 S.Ct. 1786 (2007) the high court revisited the flow control issue, this time in a context where, unlike the Clarkstown transfer station, the designated facilities were publicly owned. In this case the court ruled that county ordinances requiring haulers to deliver locally generated waste to publicly owned waste facilities did not discriminate against interstate commerce. The majority opinion found that the ordinances merely enabled the counties to pursue traditional police (policy?) power functions and that the underlying policy choice (public sector waste handling) should be free from court interference. Analyzing the ordinances under the burdens-versus-benefits test, the court found that the public benefits of flow control outweighed whatever burden on commerce might exist.

Following the Oneida-Herkimer decision the SWANA International Board of Directors (IB) decided it was important for the Association to clarify its position on flow control and at its October 7, 2007 meeting issued the statement contained in Section I of this policy.

Considerations

In clarifying its position on flow control SWANA recognized that it needed to consider its prior policy T-5.1 (Importation and Exportation of Municipal Solid Waste.) In T-5.1 SWANA supports the principle of free movement of municipal solid waste across jurisdictional boundaries as an article of commerce irrespective of origin, subject to traditional state, provincial and local government responsibilities.

T-5.1 expressly contemplates that the general principle of "free movement of municipal solid waste" necessarily has reasonable and appropriate limitations, and among them, practices favoring the public sector in the realm of traditional local government activity. "[L]aws that favor the government in such areas – but treat every private business, whether in-state or out-of-state, exactly, the same – do not discriminate against interstate commerce," Chief Justice Roberts wrote in the *Oneida-Herkimer* majority opinion. Moreover, the public comment and participation called for in the flow control policy promotes an early-stage benefits-versus-burdens analysis, which every flow control measure must withstand in any court challenge. Based on these considerations, SWANA is satisfied that its flow control policy is consistent with T-5.1 and U.S. Supreme Court decisions.

Approved by the International Board
on September 25, 2009.

International Secretary

Dated October 8, 2009

SWANA TECHNICAL POLICY T-6

RECYCLING AS PART OF INTEGRATED SOLID WASTE MANAGEMENT

SWANA defines recycling as follows:
The collection, sorting, marketing, processing, and transforming or remanufacturing of Recyclable Materials into Recycled Materials and Recycled Products, including marketing thereof; and the purchase and use of Recycled Products.

Policy
SWANA supports

- Solid waste recycling programs which are a part of an integrated solid waste management system that includes the diversion, recovery and recycling of materials from the solid waste stream.
- Recycling programs that lead to the maximum recovery and utilization of materials from solid waste into new products.
- Recycling programs that are subject to provincial, state and local government permits, licenses, rules and regulations.
- Recycling programs that are consistent with good economic practices.
- The efforts of industry, business, government and individuals to recycle.
- Recycling programs that protect worker safety, human health and the environment.
- Product stewardship policies (see SWANA Policy T-2.1) that promote cooperation between manufacturers and all stakeholders involved in product recycling.
- Conversion Technologies (see SWANA Policy T-11) that are compatible with recycling and source reduction efforts as part of a community's integrated solid waste management system.
- Organics Management practices (see SWANA Policy T-7) that are compatible with recycling and source reductions efforts as part of a community's integrated solid waste management system.
- Waste-to-Energy technologies (see SWANA Policy T-8) that recover energy from wastes in a manner compatible with recycling and source reduction efforts as part of a community's integrated solid waste management system.

SWANA encourages institutions, governments [provinces, states, local, nations], and individuals to promote initiatives that establish recycling as a part of an integrated solid waste management system. Such initiatives should be consistent with an integrated solid waste management system, as follows:

Industry, Business and Institutional Recycling Initiatives
Industries, businesses and institutions should implement solid waste recycling initiatives which:

- Establish recycling programs consistent with, and in conformance with, local government integrated solid waste management plans
- Use purchasing power to purchase products that contain recycled materials,
- Adopt business practices which promote the diversion of materials from the solid waste stream,
- Address, through design and production, the utilization of secondary materials in the manufacture of products and materials.
- Establish diversion programs consistent with economic analyses, to maximize the diversion and recovery of materials from their solid waste streams for recycling.

- Establish intermediate processing facilities, or secure the services of intermediate processing facilities, to process and prepare diverted materials.
- Provide opportunities to divert recyclable materials produced as a result of its operations, processes, or employees.
- Establish protocol to regularly monitor its practices to identify new materials for diversion and recycling.
- Encourage the adoption of policies that promote recycling in purchasing, contracting, and other business practices.
- Establish programs to take back products for producer recycling.
- Establish or support alternative technologies for processing of materials.
- Support local, state or federal initiatives to restrict or ban products from disposal, consistent with SWANA Policy T-3.6 Solid Waste Disposal Bans.

Federal Government Recycling Initiatives

SWANA supports the following actions by national governments to stimulate increased diversion and recycling of materials diverted from solid waste:

- Identify funding sources for mandated programs.
- Assure uniformity in specifications for secondary materials and products made from secondary materials.
- Assure interstate and international consistency in the movement of primary and secondary materials.
- Foster materials use practices that stimulate markets for recyclables.
- Foster the development of markets for new materials diverted and recovered from the various solid waste streams through economic and regulatory incentives and disincentives.
- Implement policies for the purchase of recycled material content products.
- Require federal agencies to meet the same waste reduction goals required of state and local jurisdictions.
- Establish national recycling goals.
- Promote public education to stimulate industry, business, institutions, government and individual support of recycling.
- Adopt product stewardship policies for products and packaging consistent with SWANA Policy T-2.1, and that provide incentives to producers to incorporate environmental considerations into the design of their products and packaging.
- Consider adopting extended producer policies for products that are difficult to recycle and/or for which there is no existing infrastructure for collection and/or processing.
- Promote recycling as a means to stimulate development of green industry and green jobs.
- Monitor and report on the progress of recycling initiatives and mandates, and periodically evaluate the need for enhancements and/or modifications.
- Promote research and development of alternative technologies for processing of materials,
- Establish reuse initiatives.
- Adopt legislation to ban products that, when used or disposed of improperly, can be harmful to human health and the environment.

Provincial and State Government Recycling Initiatives

Provincial and state governments should implement programs for the diversion and recycling of materials from solid waste with initiatives which:

- Establish uniformity in specifications for secondary materials and products made from secondary materials.
- Foster materials use practices that stimulate new markets for recyclables.
- Foster the development of markets for new materials diverted and recovered from solid waste through economic and regulatory incentives and disincentives.
- Establish provincial/state diversion goals, either voluntary or mandatory diversion rates, for recycling from public and private generators, systems and solid waste facilities.
- Require provincial/state agencies to meet the same diversion goals established for local jurisdictions.
- Assist businesses and industries in the assessment and development of recycling programs.
- Provide technical assistance programs for industry, businesses, institutions, local governments and individuals to assist them in planning and implementing solid waste recycling programs.
- Sponsor pilot projects to demonstrate the efficacy of new recycling programs and to generate increased support for recycling programs.
- Provide information through clearinghouses about solid waste recycling programs, methods and initiatives.
- Provide grants and loans to stimulate new solid waste recycling programs, where practical.
- Identify funding sources for mandated programs.
- Implement policies for the purchase of products containing recycled materials.
- Support public education to stimulate industry, business, institutions, government, and individual support of recycling.
- Establish rules, regulations and permits for the siting, design and operation of recycling facilities.
- Adopt product stewardship policies for products and packaging that are consistent with SWANA Policy T-2.1, and that provide incentives to producers to incorporate environmental considerations into the design of their products and packaging.
- Consider adopting extended producer policies for products that are difficult to recycle or for which there is no existing infrastructure for collection and/or processing.
- Promote research and development of alternative technologies for processing of materials.
- Establish reuse initiatives.
- Adopt legislation to ban products that, when used or disposed of improperly, can be harmful to human health and the environment.

Local Government Recycling Initiatives

Local governments should implement economically feasible solid waste recycling initiatives which:

- Assist businesses and industries to establish diversion and recycling programs.
- Establish short- and long-term diversion goals for recycling, consistent with economic, technological and market analyses, and within an integrated solid waste management plan.
- Establish, or foster the establishment of solid waste recycling programs that implement the diversion goals of integrated solid waste management plans.
- Establish regulations and ordinances that require developers to incorporate recycling design considerations into new developments.
- Establish regulations and ordinances that require developers to incorporate practices that help achieve mandatory diversion rates for recycling of construction debris.
- Require solid waste management private sector service providers to prescribe to the diversion goals established in integrated solid waste management plans.
- Establish programs for the diversion and utilization of yard trimmings and food scraps from all generators.

- Promote the recycling of textiles and other durable goods.
- Provide public education programs to support volunteer participation in local government sponsored recycling programs.
- Establish, or foster, the establishment of, collection and drop-off programs for recyclable materials.
- Establish, or foster the establishment of, or secure the services of, intermediate processing facilities to process the materials diverted from solid waste within their jurisdiction.
- Establish public education programs to promote and advance the ethic of recycling.
- Adopt a procurement policy for recycled content materials.
- Require recycling in all vendor contracts for products and services.
- Monitor progress in meeting recycling goals and publish the results.
- Periodically evaluate recycling programs for modifications and enhancements.

Educational Initiatives to Promote Individual Recycling/Reduction Programs
Educational programs targeting individuals should contain the following solid waste recycling/reduction concepts:

- Leaving grass cuttings on the lawn.
- Participating fully in local government sponsored recycling programs.
- Purchasing habits that result in the generation of less solid wastes.
- Educating children to instill the solid waste recycling ethic.
- Purchasing products that are recyclable and that are made with recycled content materials.
- Incorporating recycled content building materials into development or renovation projects.,
- Supporting extended producer policies for hard to recycle materials or for products for which there is no existing infrastructure for collection and/or processing.
- Looking for opportunities to establish markets to recycle or reuse materials that are typically difficult to recycle or have limited recycling infrastructure or reuse potential.
- Supporting and participating in research and development of alternative technologies for processing of materials.

Approved by the International Board
On December 27, 2013

Richard Allen
International Secretary

January 22, 2014

SWANA TECHNICAL POLICY T-6.1

MUNICIPAL SOLID WASTE RECYCLING

I. BACKGROUND

Recycling includes the collection, sorting, marketing, and processing, of materials removed from the solid waste stream, and the transformation or remanufacture of those materials for use as feedstock for new products and/or other productive uses. Successful recycling includes an examination of the solid waste stream to determine what is recyclable and marketable. Recycling efforts can be implemented in the residential, commercial and industrial sectors.
Municipal solid waste (MSW) is comprised of a number of solid waste streams. The three principal solid waste streams that compose MSW are:

- Residential solid waste – solid waste generated from single-family residences, and multi-family residences. Recyclables prevalent in the residential waste stream include paper, plastics, metals, food scraps, yard trimmings, textiles and personal electronics.

- Commercial solid waste -- solid waste generated from businesses, offices, stores, markets, institutions, government, and other commercial establishments. Recyclables common in the commercial waste stream include paper, plastic, metals, food, yard trimmings, lumber, textiles, and electronic devices.

- Industrial solid waste -- solid waste generated from non-process lines, shipping, plant offices; solid wastes not regulated under the Clean Water Act, Clean Air Act, and Subtitle C of the Resource Conservation and Recovery Act;

Other solid waste streams that may also be a part of MSW include:

- Bio-medical wastes – treated waste, where allowed, generated from hospitals and other acute care facilities, health research institutions and homes that result from the use and administration of medications, surgery or other medical procedures, or medical or health research and development.
- Biosolids – typically waste generated from the de-watering of municipally generated wastewater.

- Construction and demolition debris -- materials resulting from the construction and demolition (C&D) of buildings and other structures, including materials such as metals, wood, gypsum, asphalt shingles, roofing, concrete, rocks, rubble, soil, paper, plastics and glass, but excluding putrescible wastes. C&D components can be a significant portion of the MSW stream with a high potential for recycling. Non-recyclable C&D wastes may be disposed in municipal solid waste landfills or specially designated landfills, or if cleaned of unacceptable debris, used for land reclamation.

- Other -- there are a host of other separately managed solid wastes that may be a part of MSW such as tires, street sweepings, storm catchment wastes, automotive shredding fluff, carpet, white goods, furniture and mattresses.

Recycling material from the waste stream can be encouraged through several approaches, including:

- Ordinances/legislation/mandatory programs
- Voluntary programs at businesses or institutions
- Reward or incentive based programs

Recyclables can be collected through a variety of approaches, including:

- Curbside collection of commingled recyclables (single-stream collection)
- Curbside collection of source separated recyclables
- Curbside collection of mixed MSW
- Drop-off and buy-back programs
- Deposit ordinances and legislation
- Commercial and industrial collections specific to the participating generator

It is not sufficient to just encourage recycling and collect recyclable materials. The efficacy of these programs is dependent on a number of factors, including location, demographics, and availability of processing capacity and markets

II. DISCUSSION OF RECYCLING OPPORTUNITIES

Municipal solid waste is a complex mixture of many materials discarded by every individual, business, government, and industry in North America. This section reviews these material segments from the standpoint of the potential for local government to effectively implement recycling programs.

A. Paper

Paper, which is found in everything from packaging to mail to office supplies, makes up the largest percentage of the municipal solid waste stream. It is also one of the most recovered materials, as recycling opportunities are often readily available. Opportunities to recycle may be reduced if the paper products are contaminated by such constituents as wax and adhesives, but recyclers are increasingly finding ways to overcome these obstacles.

1. *Packaging* - Paper packaging (paperboard), such as cereal and pasta boxes, is often itself made from recycled paper stock

2. *Cardboard* – Corrugated cardboard boxes make up the largest percentage of shipping boxes. When disposed of, this material is called Old Corrugated Cardboard (OCC) and has a long-established niche in the recycled paper market. OCC has a strong recycling market domestically and abroad, and is often compacted in bailers to reduce the volume of shipping.

3. *Newsprint and Magazines* - Newsprint and magazines can be effectively taken out of the municipal solid waste stream through curbside collection or drop-off centers. Old newsprint is recycled by de-inking mills. Markets for recycled magazines and other coated papers can be limited

4. *Office Paper* - High-grade de-inking grades such as office papers are utilized to produce tissue products such as paper towels, toilet paper, and facial tissue. .

5. *Mixed Paper* - Mixed paper is a large portion of the municipal solid waste stream. The potential for recycling this material can be hampered by contaminants such as coated paper stock, pressure sensitive labels, metal foils, and organic materials. Limiting or eliminating the presence of such contaminants could improve the recyclability of these papers. Utilization of this material as a feedstock for composting or as a fuel in a waste-to-energy facility should be considered.

B. Containers

1. *Ferrous Metal* – Food cans are a major source of ferrous metal in the municipal solid waste stream. The market for scrap ferrous is stable, and recovery of ferrous from collected recyclables is relatively simple because of its magnetic characteristics. Scrap metal processors play an integral role in the processing and aggregation of scrap metal.

2. *Aluminum* – Aluminum beverage containers constitute the major portion of aluminum in the municipal solid waste stream. The recovery market is strong. Public education and cooperative efforts, including some statewide bottle/can deposit programs, during the past 20 to 30 years have proven effective at recovering aluminum.

3. *Glass* - Glass containers come in two versions – refillable and non-refillable – and many colors (clear, green, brown, blue), which affects the marketability of recovered product. The dominant share of the market is non-refillable food and beverage containers.
Markets for glass containers are well-established but, recovered glass must meet strict industry specifications for quality, including sorting by color. Material recovery facilities (MRFs) can separate and process recovered glass containers, turning it into a glass cullet. Source separating glass by color before it reaches the MRF can also improve the quality and marketability of the cullet. Markets for glass are more limited in rural areas, where transportation costs can render recycling cost prohibitive

4. *Plastic* - Plastic containers continue to gain an increasing share of the consumer packaging market. Most plastic products carry a code indicating what type of plastic resin(s) are used in the product, thus facilitating separation and recycling of single-resin plastic products. However, some plastic containers, (such as squeezable bottles and flexible pouches), may be a mix of several plastic resins, which complicates their recyclability. The plastics industry is working to develop an infrastructure to make recycling of more complex plastic containers a viable option.

5. *Composite Packaging* - Composite packaging, a combination of different types of packing materials, is frequently utilized for beverages and select foodstuffs. This packaging group includes plastic coated paper milk containers and paper/plastic/foil "aseptic" packs for juice and sauces. Composite packaging is difficult to recycle, though processing approaches are under development.

C. Food Scraps

Commercial food scraps along with yard trimmings, represent the most easily separated organic wastes in the municipal solid waste stream. The major sources of commercial food scraps are food service establishments, grocery and super stores and the warehouse/distribution industry.

Many local governments are increasingly seeking ways to implement separate collection systems for these commercial, large-scale food scraps, while also evaluating the addition of household food scraps to curbside organics collection programs. This would allow the capture of these materials for composting or anaerobic digestion.

D. Vegetative Wastes

Vegetative wastes include, yard wastes, street sweeping waste, lawn service wastes, nursery wastes and other similar organics. Soiled paper waste may also be added to this category.
There are several ways to recycle or reuse vegetative wastes including: mulching; on-site composting by generators (e.g. residences, nurseries, or horticulture activities); through organized collection systems with centralized composting or anaerobic digestion operations.

Residential or "backyard" composting can complement large scale composting or anaerobic digestion.

E. Non-food/beverage container glass

Small quantities of glass, such as broken dishes or window panes, and ceramics are present in the solid waste stream, but the chemistry of this glass is not compatible with container glass. This type of mixed glass can be crushed and used in insulation or "glassphalt", (which is road asphalt that includes a percentage of recycled glass).State and federal regulations play a role in the marketability of recovered material for these uses.

F. Household Hazardous Wastes (HHW) /Paints/Pesticides/Unregulated Hazardous Wastes

These wastes are a very small portion (typically less than 1 percent) of the municipal solid waste stream. Removal of these products from the disposed waste stream does not result in measurable reductions in weight or volume, but does result in the reduction of some toxic materials from the residential solid waste stream. HHW is typically considered a universal waste exempt from federal disposal restrictions though the same products disposed by small businesses are banned from landfills. Thus, many communities and agencies nation-wide have developed permanent or recurring HHW and very small quantity generator hazardous waste collection programs. Collected materials require special handling, and if they are hazardous wastes, must be disposed of as such. Some producers (such as agricultural pesticide manufacturers) are developing extended producer responsibility programs to take back products and empty containers.

G. Construction & Demolition Debris

Construction and demolition debris is sometimes disposed of in separate inert or demolition debris landfills rather than MSW landfills because of the different nature of the material and the existence of regulations allowing and/or making alternate disposal facilities cost competitive. Depending on the building activity and age of the building stock in an area, C&D debris can represent a significant portion of the municipal solid waste stream. Much of this waste is recoverable, and can be reclaimed, reused, or recycled. If collected mixed, processing is required to separate the material components and render them suitable for marketing. Materials can also be source separated on site, which reduces the need for processing, and facilitates re-use and recycling.

H. Batteries

Consumers tend to consider all household batteries as hazardous waste. However, batteries contain varying degrees of toxic and corrosive materials that help define the appropriate management system. Some may be more suited for recycling, some for disposal within an MSW landfill, and some for handling as a hazardous waste.

A number of communities have started collection programs for batteries. Options include:

- Deposit programs that encourage their return to dealers.
- Collection at household hazardous waste collection days.
- Separate collection at the source with recyclables or MSW.
- Producer responsibility requirements to collect and process the batteries.

The advantage of collecting batteries as part of household hazardous waste collections is that it sends a clear message to the public that these products are not benign and they require special handling. This may discourage their use except where necessary. Careful consideration of costs and processing capacity for these materials must be used when implementing a program to ensure its long term viability.

I. Other Recyclable Materials

There are many types of waste materials that do not fit neatly into categories. These include tires, used oil and filters, discarded appliances ("white goods"), discarded electronic waste (“e-waste”) and similar hard to collect difficult-to-process materials. These materials need specialized collection and processing systems in order to successfully remove them from the waste stream.

Recovered tires, for example, can be burned in some facilities as a fuel to generate electricity, made into new durable products, processed to manufacture new rubber products, or even formed into reefs to provide marine habitats. However, all of these potential uses are subject to processing and market demand limitations and thus are not widely available everywhere in North America.

Used oil and filters can be collected at solid waste facility drop-off sites, automotive garages and household hazardous waste collection centers or events for re-refining or reuse. A very high percentage of auto hulks are recycled by the scrap industry, although disposal of the shredder "fluff" from auto recycling is a consistent concern due to the presence of hazardous contaminants. Shredder fluff has been utilized as alternative daily cover at MSW landfills.

Household appliances (white goods) are already recovered in large percentages. Many states and provinces have passed laws requiring the removal of capacitors and recycling of CFC coolants from appliances. Appliances can be handled by scrap dealers equipped to remove and handle PCBs and the chlorofluorocarbons (CFCs) used as refrigerants.

Electronic waste is a growing portion of the municipal waste stream, including personal devices such as mobile phones, tablet and laptop computers, personal computers, and other personal electronics. Extended producer responsibility laws in some states facilitate the collection and recycling of these devices by requiring the manufacturers to design and implement a program for

collection and processing. Some municipalities operate periodic collection events or have established permanent collection and/or processing facilities for the recovery of these devices.

III. POLICY POSITION

SWANA supports recycling as an important method of municipal solid waste management. Recycling, in concert with other methods of integrated municipal solid waste management (IMSWM), including reduction, reuse, composting, energy recovery, and landfilling) provides for the safe handling of municipal solid waste.

SWANA believes that bans on landfill disposal of recyclable materials or zero waste initiatives by state or local municipalities should be implemented only when and where sustainable disposal alternatives exist (See SWANA Policy T-3.6 Solid Waste Disposal Bans). The consideration of such bans and initiatives should be fully vetted in light of practical considerations such as collection, processing, markets and economics before a decision to proceed is incorporated into the municipal solid waste plan..

SWANA supports recycling of municipal solid waste with the following considerations

- Local government recycling programs should be implemented when there is:
  - an established market demand for a particular commodity, or
  - a clearly established societal benefit e.g. toxicity reduction, landfill space savings, resource conservation, or environmental improvement, and
  - an ability to sustain the program on an ongoing basis.
- Mandatory diversion programs should be considered where there are strong federal and state/provincial programs for market development
- The true cost of recycling within the local solid waste management system should be developed and considered as part of any decision to establish such a program, and must be clear to the generator. The manufacturer and generator should pay to support recycling.
- Recycling as a valuable part of integrated solid waste management, must be established in conformance with local conditions and state/provincial law.
- A wide variety of materials can be recycled (e.g. aluminum, glass, ferrous metals, various grades of paper, plastics, and yard trimmings). The feasibility of recycling specific materials should be locally determined based upon collection systems, processing resources, markets, transportation costs and other factors.
- A nation-wide program should be developed to establish a uniform and comprehensive solid waste generation measurement methodology that could be used to determine the effectiveness of recycling programs.
- Subsidies that favor the use of virgin materials should be eliminated.

- Mandatory coding for plastic resins should be adopted, and a corollary public education program initiated to explain the difference between resin identification and product recyclability.

- Recycling cannot be sustained in the absence of reliable markets. Therefore, private, state/provincial and federal initiatives to expand and stabilize recovered materials markets at all levels should be developed.

- To encourage market development through a leadership role, governments (local and state/provincial) should adopt procurement policies that favor products containing recycled materials.

- Recovered materials marketing should stress consistent quality control and recognized grades of materials.

- Economic incentives and disincentives should be established at the state and federal levels to encourage the use of recovered materials over virgin materials, investment in recycling equipment, and investment in facilities for processing recycled materials into new products.

- Extended producer responsibility policies should be considered for used and unused products for recycling or deconstruction.

- Production changes to reduce or eliminate waste generation and increase the reuse of materials or the non-production of materials at the source should be considered.

- Materials should be removed from the municipal solid waste stream for reuse to the extent that such reuse:

    - reduces our dependence on non-renewable resources; or
    - consumes less energy than other solid waste management methods; or
    - reduces the cost of municipal solid waste management systems; and/or
    - does not have greater adverse environmental impact than other waste management methods.

Approved by the International Board
On December 27, 2013

Richard Allen
International Secretary

January 22, 2014

SWANA TECHNICAL POLICY T-6.2

SAFE RECYCLING OF MERCURY CONTAINING LAMPS

I. Background

Fluorescent lamps (including compact fluorescent lamps or CFLs – primarily used by households to replace incandescent bulbs and fluorescent tubes – used predominantly in commercial, industrial and institutional settings) save significant amounts of energy, but may also pose environmental and health risks at the end of their useful life if managed improperly.

- **Energy Savings.** Fluorescent lamps use only 25% of the electricity used by incandescent bulbs and last up to 10 times longer.
- **Health Risks.** However, fluorescent lamps contain a small amount of mercury (a harmful neurotoxin), that could pose a health and environmental risk if released from lamps that are broken during discard, storage, transport or disposal.

Beginning in 2012, federal law prohibits the production and sale of 100-watt incandescent bulbs with other wattages and types being phased out over the next few years. Fluorescent lamp use has greatly expanded as a result and large numbers of fluorescent lamps are entering the waste stream. Spent lamps should be stored, transported and recycled or disposed of in a manner that minimizes the release of mercury.

II. Discussion

Health and Environmental Benefits of Recycling

The U.S. Environmental Protection Agency (EPA) encourages recycling all mercury-containing lamps to prevent the release of mercury into the environment and to reuse valuable materials.[1] Recycling not only reduces health and safety risks, it also enables separation, processing and reuse of virtually all components of a fluorescent lamp, including metal end caps, glass tubing, phosphor powder, and mercury.

Federal & State Requirements

Handling Lamps as Universal Waste. In 1999, EPA added mercury-containing lamps to the list of hazardous wastes subject to the **Universal Waste Rules (UWR)**. UWR replace and streamline

[1] U.S. EPA Web site on Recycling Mercury-Containing Lamps, http://www.epa.gov/osw/hazard/wastetypes/universal/lamps/

more stringent hazardous waste rules for generators collecting, storing and transporting fluorescent lamps. They were designed to discourage generators' improper handling by reducing costs and administrative burden.

The federal UWR applies only if *both* of the following conditions are met:

- lamps fail a mercury leaching test that determines whether the lamps are hazardous waste , and
- Lamps are generated by a *business* in amounts greater than 220 pounds per month.

Small quantity generators and **households** are **exempt.** They may dispose of their lamps as solid waste in their trash *unless* their state law is more stringent than the federal UWR. As of the date of this Technical Policy:

- **small quantity (business) generators** are subject to the UWR requirements in more than half of the states; and
- **households** in six states may not dispose of mercury-containing bulbs in their household trash.

Whether lamps are discarded by small businesses, households, or by larger businesses as universal waste, once lamps reach the destination facility for recycling or disposal, they are subject to federal hazardous waste handling rules.

Landfill Disposal Bans. As of the date of this Technical Policy, about 20% of states have banned disposal of all mercury-containing lamps in landfills, whether or not they fail the federal hazardous waste mercury leaching test.

Federal Canadian Requirements. The Canada Wide Standards (CWS) for mercury-containing lamps take a pollution prevention approach by calling for an 80% reduction in the average mercury content of lamps sold in Canada as of 2010. The CWS also require provinces to assess the feasibility of recycling/recovery of lamps and to implement initiatives to encourage these types of activities.

Fluorescent Lamp Packaging

Lack of Protective Standards. Fragile lamps can easily break unless properly packaged during discard, storage, and transport to their ultimate recycling or disposal facility. When fluorescent lamps break, they release mercury vapors in sufficient amounts to exceed personal exposure safety limits. Nonetheless, federal and state regulations (with the exception of Washington as of the date of this Technical Policy) do not require storage and shipment of spent fluorescent lamps in containers designed to prevent mercury vapors from leaking into the environment. The federal UWR for fluorescent lamps simply requires that containers:

1. "*remain closed," and*

2. *"lack evidence of leakage, spillage or damage that could cause leakage under reasonably foreseeable conditions*."

Product Responsibility: mail-back "mercury vapor packaging". The State of Washington has set a goal to recycle all fluorescent lamps by 2020. Some recycling programs collect spent lamps by mail-back. Washington has adopted packaging standards requiring all recycling mail-back programs to use containers with "*mercury vapor packaging*":

> *"sealable containers that are specifically designed for the storage, handling and transport of mercury-containing lights in order to prevent the escape of mercury into the environment by volatilization or any other means."*

Collection of Lamps from Households & Businesses

Typical household solid waste and recycling services that efficiently manage large quantities of consumer recyclables cannot readily segregate small, fragile lamps during curbside pickup. The mercury lamp recycling industry in conjunction with retailers, manufacturers and local governments, is developing specialized methods to collect lamps for recycling from households and businesses.

The following types of programs represent common approaches that have been used to ensure proper collection and recycling of fluorescent lamps from consumers:

- **Mail-back programs** provide pre-addressed containers for storage and shipment of spent bulbs through the U.S. Postal Service or common carrier, that are convenient to consumers who do not have access to a collection site, collection program, or other recycling services.
- Collection programs at participating **retail and wholesale locations** allow consumers to recycle their spent fluorescent lamps at designated locations at no or minimal cost.
- **Publically-sponsored programs** such as household hazardous waste collection facilities, municipal collection sites, and curbside services.

Small businesses often take advantage of mail back programs that supply boxes for storing spent lamps, with pre-paid mailing to a recycler via common carrier, such as UPS or FedEx. Small businesses tend to ship spent bulbs when the storage/shipment box is full or within one year after storing the first lamp (required by federal regulation).

Larger generators of lamps can store spent lamps in fiber barrels and ship them routinely or when they aggregate a trailer load. Businesses ship the barrels to consolidation centers for further accumulation, or directly to a recycler.

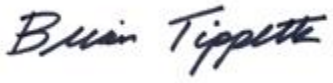
III. Policy Position

SWANA, as an organization of solid waste professionals, supports the following policy positions on responsible recycling of mercury lamps:

- **Required Recycling**: Governments at all levels should require safe recycling of all mercury-containing lamps from households, and small and large quantity generators. Recycling programs should:
  1. Include enforceable worker safety, public health and environmental protection standards;
  2. Provide flexible and cost-effective options for households, small and large quantity generators; and
  3. Require the use of protective, mercury vapor packaging to prevent releases to the environment.
- **Implement Recycling Prior to Disposal Bans**: As part of an integrated solid waste management system, ensure recycling infrastructure is in place prior to banning disposal of mercury-containing lamps.

Approved by the International Board

on February 10, 2012



International Secretary

Dated February 22, 2012

SWANA TECHNICAL POLICY T-6.3

SAFE RECYCLING OF ELECTRONIC WASTE

I. Background

Discarded electronics or "e-waste" — including TVs and other video and audio equipment, computers, computer accessories, printers, scanners, fax machines and mobile devices (e.g., phones, PDAs, tablets, pagers) — comprise only one to two percent of the municipal solid waste stream, but are particularly well suited to specialized handling and recycling for several reasons:

- Manufacturing electronics requires significant energy and uses valuable components, making recycling highly beneficial and economical;
- Some electronics contain toxic substances that warrant greater care for safe management; and
- Rapid growth and change in the market has led to a proliferation of discarded products needing protective management.

Electronics contain valuable materials, such as precious metals, copper, and engineered plastics, all of which require considerable energy to extract, process and manufacture from virgin resources. Recycling electronics recovers these valuable materials for reuse, conserves resources, and results in lower pollutant and greenhouse gas emissions than making products from virgin materials. According to a July 2012 report by Global Industry Analysts titled "Electronics Recycling: a Global Strategic Business Report," e-waste reuse and recycling will increase significantly driven by environmental legislation and corporate sustainability programs.

II. Discussion

U.S. Federal & State Requirements

Federal Legislative Mandates for Electronics Recovery: At present, there is no Federal mandate to recycle e-waste.

State Mandatory Electronics Recovery Programs: Many states have instituted mandatory electronics recovery programs through extended producer responsibility laws or in California, through imposition of a consumer advanced recycling fee applied to specific electronics.

Federal Regulations Governing Management of Used Electronics: Some electronics (e.g., color cathode ray tubes (CRTs) computer monitors and cell phones) may test "hazardous" under Federal regulations and would therefore be subject to special handling requirements. EPA encourages reuse

and recycling of e-waste, including that which tests "hazardous," by applying less stringent management requirements for products bound for reuse and recycling. For example:

- **CRTs including computer monitors and televisions** sent for continued use (i.e., resale or donation) are not considered hazardous wastes;
- **CRTs** sent for recycling are subject to streamlined handling requirements;
- **Whole circuit boards** sent for recycling are exempt from the hazardous waste regulations; and
- **Shredded circuit boards** are excluded from the definition of solid waste if they are containerized (i.e., fiberpaks) prior to recovery and do not contain mercury switches, mercury relays, nickel cadmium batteries, or lithium batteries.

National Electronic Recycler Certification Programs

EPA encourages all electronics recyclers to become certified by demonstrating to an accredited, independent third-party auditor that they meet specific standards to safely recycle and manage electronics. Two accredited, national certification standards exist: the Responsible Recycling Practices (R2)/Recycling Industry Operating Standards (RIOS) and the e-Stewards® standards. These certification programs comprise strong environmental standards to maximize reuse and recycling, minimize exposure to human health or the environment, ensure safe management of materials by downstream handlers, and require destruction of all data on used electronics.

State Regulatory Requirements for Disposal of Electronics that Test "Hazardous"

State regulatory requirements for e-waste can be more stringent than the Federal requirements, and vary from state to state. Many states are developing Universal Waste exemptions for e-waste, which also streamline management of e-waste bound for recycling.

Canadian Requirements

Canada has no national electronics waste laws. However, the Canadian Council of Ministers (CCME) endorsed a series of electronics product stewardship principles in 2004 to assist and support jurisdictions in the development of e-waste programs. Provinces in Canada have or are expected to pass legislation requiring recycling surcharges be paid on designated electronic goods shipped or sold into the province including five general categories for end-of-life product recycling. Products affected are PCs, notebooks, monitors, printers and televisions, with additional items to be phased in, as per provincial schedule.

III. Policy Position

SWANA, as an organization of solid waste professionals, supports the following policy positions on responsible recycling of electronic waste:

- Regional and local governments should endeavor to assure that flexible and cost-effective recycling options that meet applicable state and local requirements are available to all households and businesses within their jurisdictions;

- Federal governments should assure that options are available for the reuse and/or recycling of e-waste generated by all federal departments and agencies;

- All levels of government should require that recycling facilities comply with enforceable worker safety, public health and environmental standards. Requiring recycling facilities to be certified under recognized, national recycling certification programs would facilitate compliance;

- Federal and international programs and conventions should prohibit the international shipment of e-waste to facilities that do not comply with standards for worker safety and public health and the environment, and to countries that do not have regulatory programs to enforce such standards; and

- Implement Recycling Prior to Disposal Bans: In accordance with *SWANA Technical Policy T-3.6 Solid Waste Disposal Bans*, prior to implementing a disposal ban or restriction on e-waste, infrastructure must be in place to regulate, collect, store, transport, re-use, recycle or re-manufacture the e-waste. Disposal bans should include provisions to protect owner/operators of solid waste facilities from liability for inadvertent disposal of e-waste, if they carry out waste screening programs in accordance with the provision of the facility permits and have made good faith efforts to post signs and notify haulers that covered electronics are not accepted by the facility.

Approved by the International Board
On January 7, 2013

Michelle Leonard
International Secretary

January 22, 2013

T-6.4 SWANA TECHNICAL POLICY

MEASURING RECYCLING

SWANA Policy

SWANA supports the use of transparent and consistent methods to measure tons of materials recycled as a part of an integrated solid waste management system. From a historical and geographic perspective, SWANA recognizes that recycling has been measured using various approaches across North America. The objectives of this policy are to (1) encourage entities that measure recycling to disclose and provide transparency regarding the numbers and methods utilized to calculate recycled tons; and (2) recommend a consistent methodology be used for measuring recycling across organizations, program types and specific materials.

SWANA Position

SWANA supports developing a formalized approach to measuring and communicating recycling measurements as part of a sustainable materials management program and within an integrated solid waste management system. The focus of this policy is on measuring the amount and type of materials recycled (e.g. tons). Once an entity measures the quantity of material recycled, there are multiple methods that can be applied to evaluate recycling. Many of these methods utilize weight as a key component.

SWANA recognizes multiple approaches have been utilized to evaluate recycling. This policy does not include or recommend a specific approach for determining these methods or the benefits of recycling. Examples of methods to evaluate recycling include but are not limited to weight-based recycling rates, volume-based recycling rates, participation rates, capture rates, generation rates, material measurements such as life cycle and greenhouse gases, and other environmental and/or economic impacts.

This policy was developed as a collaborative effort and reflects input from SWANA members and national organizations such as the U.S. Environmental Protection Agency (U.S. EPA) and the Environmental Research and Education Foundation (EREF).

Background

- By consistently measuring tons of recycled materials, entities can calculate the benefits of recycling of materials and track the progress of efforts to implement sustainable materials management programs.
- This policy applies to any "reporting entity" that is measuring recycling. A reporting entity may include but not be limited to state, provincial /regional and local governments, as well as private businesses, trade associations or non-profit organizations that are measuring recycling.
- SWANA recognizes that some state, provincial and local governments are subject to laws that govern how those entities report their recycling measurement information.

- Efforts to measure recycling have traditionally calculated a recycling rate. A recycling rate indicates the percentage of waste generated that is recycled and is typically calculated using the formula: Total Recycled / (Total Recycled + Total Disposed) = Percent Recycling Rate; whereas totals are measured on a weight basis (e.g. tons). This formula uses sorted recyclable materials sent to entities to be recycled into new products, not materials at the collection point. Some industry participants believe that this method treats all tons of recycled material as being equal because it does not differentiate the various benefits associated with recycling different materials.
- Recycling measures are only useful when transparent definitions describe the material being managed. Clear definitions are thus the first requirement for establishing recycling measures for any material, or combination of materials.
- Unless other laws or policies of a state, province, or region require certain reporting metrics be used, reporting entities should utilize the reporting framework developed by the U.S. EPA to measure recycling. Information on this framework is provided on the U.S. EPA's website at: https://www.epa.gov/smm/sustainable-materials-management-us-state-data-measurement-sharing-program.
- In addition, SWANA encourages reporting entities to utilize U.S. EPA's *Measuring Recycling: A Guide for State and Local Governments* as a resource for developing the methodology to measure recycling. This report is available at: https://archive.epa.gov/wastes/conserve/tools/recmeas/web/pdf/guide1.pdf [*Note: EPA is in the process of updating this guide, and expects the new version to be published in 2018. Once it is published, this policy can provide the updated link*].
- Reporting entities should be as transparent as possible when measuring recycling and should communicate the basis for the data used. Reporting entities should clearly define terms when reporting recycling information. This should include but not be limited to information on the management methods (e.g., recycling, composting, landfill, waste to energy, etc.), material types (e.g., paper, plastic, glass, metals, organics, etc.) and included sectors (e.g., residential, commercial, institutional and industrial).
- SWANA understands that recycling quantities may need to be calculated based on a range of assumptions and varied methodologies. In all instances, the reporting entity should be as transparent as possible in disclosing the methodology for the information reported. At a minimum, reporting entities should disclose information on the following: definition of recycling; materials and sectors included; reporting period; whether the reported information was provided on a mandatory/voluntary basis; how double counting was addressed; efforts to extrapolate or fill data gaps; accounting for residuals; and accounting for importing/exporting.
- While many governments have developed reporting requirements to measure recycling, SWANA would encourage reporting entities to review the 2017 study completed by the State of Texas to measure recycling as an example that is consistent with this SWANA policy. The Texas study was primarily based on the methodology from the U.S. EPA's *Measuring Recycling: A Guide for State and Local Governments* and the report provides transparency for the reported information. The report is available at: http://www.txrecyclingstudy.org/.

Going forward, SWANA should continue to evaluate approaches to measure recycling including but not limited to participation rates, capture rates, generation rates, material measurements such as life cycle and greenhouse gases, and other environmental and/or economic impacts. To better correlate recycling data among governments, further improvements are needed for transparency and consistency in defining, measuring and reporting the tons and types of material recycled.

As clarification, this policy does not focus on an approach to measure diversion. Efforts to measure diversion are often calculated via a similar recycling rate but include materials that are diverted from the landfill which are not recycled into new materials or products. A diversion rate indicates the percentage of waste generated that is recycled and diverted, and is typically calculated using the following formula:

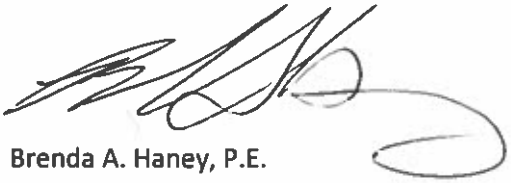
(Total Diverted + Total Recycled) / (Total Recycled + Total Diverted + Total Disposed)

= Percent Diversion Rate

whereas totals are measured on a weight basis (e.g. tons)

CERTIFIED to be correct and complete statement of the approved policy.

APPROVED by the International Board
on the 19th day of August 2018



Brenda A. Haney, P.E.
International Secretary

SWANA TECHNICAL POLICY T-7

ORGANICS MANAGEMENT AS PART OF INTEGRATED SOLID WASTE MANAGEMENT

I. Background

Organics management is an increasingly important component of integrated solid waste management as many communities develop aggressive policies to reduce disposal of municipal solid waste (MSW) in landfills. For the purposes of this policy, all references to organics mean "compostable organics" and refer to material derived from living organisms, predominately leaf and yard debris, food scraps, wood, and paper and paperboard products. Paper and paperboard products are typically managed as recyclables, and addressed in SWANA Technical Policies 6 and 6.1 (*Recycling as Part of Integrated Solid Waste Management and Municipal Solid Waste Recycling, respectively)*, although contaminated paper and paperboard are sometimes composted. Non-compostable organics, such as plastics, are generally made from fossil-derived sources. Conversion technologies (as addressed in SWANA Technical Policy T-11) can be used to manage post-recycled non-compostable residuals and materials.

To achieve high diversion goals, communities must develop strategies to manage organics which, make up a significant amount of total MSW generation. As a general guide to waste management priorities the United States Environmental Protection Agency (EPA) has adopted a waste management hierarchy that focuses first on source reduction and reuse (most preferred), followed by recycling/composting, then energy recovery and the least preferred options, treatment and disposal. [1] EPA also further refines this general hierarchy with a more detailed food recovery hierarchy following a similar path, but with the "reuse" category expanded to include uses such as feeding hungry people and animals.[2] SWANA supports minimizing waste through source reduction and reuse, as reflected in many other SWANA Technical Policies, and while this policy will address reduction/reuse, the main focus of the policy will be on the managing of organics that are collected for organic recycling, or separated at facilities, such as material recovery facilities, since this area of organics management will likely be the most challenging for communities.

[1] http://www.epa.gov/wastes/nonhaz/municipal/hierarchy.htm

[2] http://www.epa.gov/osw/conserve/foodwaste/index.htm

II. Discussion

Communities that have aggressive zero waste/organic diversion policies will have significant levels of organic waste to manage. For the year 2012, EPA estimates that food waste and yard trimmings make up 28% of the waste stream with wood waste adding another 6.3%.[3] EPA also reports that currently only 8.5% of that waste is managed through composting. The EPA data does not fully detail the feedstock composition of compost operations, however, a 2010 report by CalRecycle developed this information for California.[4] It was no surprise that in 2010, the vast majority of feedstock going to compost facilities (from MSW collection) were green materials (e.g., lawn and garden wastes). Thus, food waste which makes up 14.5% of the MSW generated, is not a significant portion of the organics that are currently managed in the United States. In fact, EPA does report the amount of food waste that was recovered in 2012, which was 0.7% of the total weight of MSW generated. This is a national number that does not reflect more robust regional programs which likely yield higher levels of diversion, however, in an overall view, a full range of organic management opportunities (both compostable and non-compostable) should be explored to properly manage an increasing level of organics diverted from the MSW waste stream.

In keeping with the EPA waste management hierarchy, options for organics management include:

1. Reduction and reuse
2. Recycling
    a. Size reduction of green material for use as a mulch or alternative daily cover (ADC) at landfills
    b. Composting
    c. Anaerobic digestion

The following provides a brief discussion of each category:

1. <u>Reduction and reuse</u>

    Many communities are developing programs to minimize food and green waste. These include:

    a. Source reduction – Reduce the amount of food waste being generated
    b. Feed people – Donate excess food to food banks, soup kitchens and shelters
    c. Feed animals – Provide food scraps to farmers

[3] http://www.epa.gov/osw/conserve/foodwaste/index.htm

[4] http://www.calrecycle.ca.gov/Publications/Documents/Organics/20100007.pdf

Green waste reduction programs include:

a. Backyard composting
b. Grass recycling (leaving grass clipping on lawns - Grasscycling)
c. 'No Mow' or low maintenance landscaping

2. Recycling of Organics

The diverted organic fraction of MSW should be recycled in a manner that optimizes its value as a resource. In this instance, recycling refers to the processing of the organic fraction of MSW to produce a product that has value. The processing can range from simply size reduction for land application as mulch, composting (which can vary greatly in technology) to produce products such as soil amendments and fertilizers, and anaerobic digestion to produce a biogas which can have several energy applications. The preferred method of recycling would be either composting or anaerobic digestion, where it is feasible, as these technologies maximize resource recovery. The following briefly describes each:

a. Size reduction of green material for use as a mulch or alternative daily cover (ADC) at landfills

Green material can be processed through chipping and grinding to a material that can be used as mulch for landscaping or erosion control. This processed material can also be used as an ADC at landfills, if in accordance with all regulatory requirements and approvals.

b. Composting

Composting is the biological decomposition of biodegradable organic solid waste under controlled conditions, predominately aerobic conditions (in the presence of oxygen). EPA describes some of the benefits of composting[5]:

- Reduces or eliminates the need for chemical fertilizers
- Promotes higher yields of agricultural crops
- Facilitates reforestation, wetlands restoration, and habitat revitalization efforts by amending contaminated, compacted, and marginal soils
- Both avoid methane from landfills and extends the life of landfills by diverting organic materials from landfills

[5] http://www.epa.gov/compost/basic.htm

- Reduces the need for water, fertilizers, and pesticides
- Serves as a sustainable marketable commodity and can be an alternative to standard landfill cover (this also can reduce landfill fugitive methane emissions) and artificial soil amendments
- Provides jobs and other economic benefits

The products of composting have many environmental benefits. Compost is widely used as a soil amendment in residential and commercial landscape and garden beds for its ability to improve the physical, chemical and biological properties of the soil, leading to healthier plants. Compost is gaining wide acceptance in the development and construction fields for its role in erosion control and stormwater management. Compost is increasingly used in agriculture for its ability to improve soil health and fertility. The list of applications and the understanding of the uses and benefits of recycled organic materials continues to grow. However, composting and composting facilities, similar to any other solid waste management options, are susceptible to potential negative environmental impacts, especially in urbanized areas. Siting of compost facilities can often be a challenge due to potential odors from the feedstock or improperly operated facilities. Depending upon the feedstock, composting can also be a source of air pollution, emitting volatile organic compounds (VOCs), ammonia, and in some cases greenhouse gases, such as methane and nitrous oxides (typically from improperly operated facilities). However, the very management parameters that make for good composting, such as maintaining a proper carbon:nitrogen ratio, adequate moisture and good airflow, also minimize methane generation and other air pollutants. Additionally, in some cases, composting can lead to significant reductions in greenhouse gas emissions, along with other environmental and community benefits.

There are generally four classes of technology used for composting:

- Turned windrows
- Forced aeration
- In-vessel systems
- Flexible bag systems

The type of system used is dependent on numerous factors, including location, economics, market availability, etc. Feedstocks for composting can vary, but typically

consist of:

- Municipal yard trimmings and other green materials
- Food scraps or other organic material
- Biosolids
    - Bulking agents such as chipped brush or sawdust that also provide a carbon source

c. *Anaerobic Digestion*

Anaerobic digestion (AD) is the biological decomposition of organic material (degradable organics) under controlled conditions in the absence of oxygen or in an oxygen-starved environment. Products produced through anaerobic digestion include biogas, liquid fertilizer, and compost. Depending on the anaeorobic process used, the residual (digestate) from the digestion process may need to be further processed by aerobic composting methods. The resultant digestate can be directly land applied as a soil amendment, or applied for the same purpose after composting. The major benefits of anaerobic digestion include renewable energy generation, reduction in greenhouse gas emissions, and waste diversion from landfills.

There are two major categories of AD systems used for processing source separated organics:[6]

- Wet (low-solid) systems (moisture content greater than 80%)
- High-solid systems (moisture content less than 80%)

There are subcategories within these categories based on specific moisture content ranges. Further subcategories involve staging sequential parts of the biological reaction in separate vessels, operating in different temperature ranges, and batch vs. continuous operation. Also, organics, such as food waste, can be co-digested in digesters with biosolids at municipal wastewater treatment plants.

Pretreatment and waste mixing is an important consideration for AD. This may involve contaminant removal, grinding and shredding, and/or conversion to slurry through the

[6] http://www.compost.org/English/PDF/Technical_Document_MSW_Organics_Processing_2013.pdf

addition of water and agitation.

An important product of AD is biogas which contains about 60% methane. Biogas, because of its methane content, is an important renewable energy. This energy can be utilized in many productive ways, including:

- Heat source (e.g., process water heating, heating buildings, space heating, etc.)
- Fueling combustion equipment (e.g., I.C. engines) to generate electricity for sale to the grid or for internal use
- Clean-up and processing of the biogas to a natural gas equivalent for direct injection in the utility natural gas pipeline, or use as a vehicle fuel

This renewable energy is not only a valuable resource for the generator, but can become an important component of programs that rely on renewable energy to fulfill regulatory demand (e.g., electric utility renewable portfolio standards).

As discussed above, the AD process also generates a digestate that must be managed. Properly handled, AD digestate can also be a valuable resource, depending on its characteristics. Digestate from high-solid digestion systems can be composted and its products utilized in land applications and as a fertilizer. Digestate from wet digestion systems can also be further treated and utilized directly as a fertilizer or further composted after dewatering.

As with compost facilities, AD facilities can also be subject to odor problems if not operated properly.

III.Policy

SWANA supports managing the MSW organic component (compostable fraction) as an important element of integrated solid waste management. The development of such programs should be mindful of established government waste management hierarchies with special consideration given to the beneficial use of the final product. SWANA also supports careful planning and evaluation of all factors (e.g., through lifecycle analysis–see below) for communities considering organic recycling and/or organic landfill bans. In support of these goals, it is SWANA's policy that:

1 . Facilities associated with organic management programs should:

- Be evaluated for the appropriate technology based on current and projected waste volumes and characteristics
- Be consistent with local government integrated solid waste management plans, and all federal, state, provisional and local governmental rules and regulations
- Be designed, constructed by, and under the supervision of experienced and qualified professionals
- Establish the full costs for the siting, design, construction and operation of the program and facilities
- Be planned and implemented consistent with the best economic, environmental, worker safety and public health practices.

2. Industries, businesses, institutions, governments and individuals should establish efforts that will lead to practical reduction/reuse of organics through programs that are carefully developed, with focused marketing and educational campaigns. These can include:
   - Promoting educational material on reducing food waste
   - Establishing initiatives to feed people and feed animals
   - Promoting education and support for home composting
   - Promoting Grasscycling
   - Supporting the purchase of mulching lawnmowers
   - Encouraging the purchase of composted materials in landscaping and land maintenance projects and activities

3. Industries, businesses, institutions, and governments should establish efforts for the maximum practical diversion and utilization of organic materials from MSW. SWANA supports diversion and recycling of the following feedstocks for organic recycling: yard debris from residential sources and similar materials from lawn, nursery, and tree service enterprises; and, food scraps generated from commercial, residential and industrial establishments.

   Initiatives for organic recycling should be implemented which:
   - Establish diversion programs to maximize the diversion and recycling of the organic fraction of their solid waste stream, consistent with economic and environmental analyses
   - Establish organic waste recycling programs consistent and in conformance with local government integrated solid waste management plans
   - Use purchasing power to purchase the products resulting from organic recycling
   - Adopt business practices that promote the diversion of organic materials from the solid waste stream for recycling
   - Establish organic material recycling facilities, or secure the services of such facilities to process and prepare the diverted organic fraction of their solid waste stream

- Assure uniform specifications for products made from the organic fraction of MSW
- Assure inter-state/province and international consistency in the regulation and marketing of mulch, compost, biogas, and other products of organic recycling
- Foster the development of new markets for organic recycling products through economic and regulatory incentives
- Support and develop public education programs to stimulate industry, business, government and individual support of organic diversion and recycling of organics

- Provide technical assistance programs for businesses, institutions, local governments and individuals to assist them in assessing, planning and implementing organic recycling programs, and provide information through clearinghouses on organic material diversion programs, methods and initiatives
- Provide grants and loans to stimulate new organic material recycling programs
- Require, where practical, governments to utilize organic recycling facilities for the organic fraction of MSW generated by their programs and operations

IV. Specific Issue

In recent years the concept of life cycle analysis has become an important tool in analyzing the complex interrelationship of waste management options, such as composting and AD, with other management alternatives, such as landfilling. Life cycle has also played a significant role in examining the overall impact of waste management on greenhouse gas emissions.

Life cycle analysis is a means of evaluating the energy use, environmental emissions and cost of alternative MSW management practices. As communities consider waste management options, such as organic diversion and organic recycling, planners need to understand all of the impacts of various waste management practices. Life cycle analysis is an important tool in evaluating these impacts.

Approved by the International Board on

July 11, 2014.

Richard Allen

Richard Allen, International Secretary

Dated July 14, 2014

SWANA TECHNICAL POLICY T-8

WASTE TO ENERGY AS PART OF

INTEGRATED SOLID WASTE MANAGEMENT

Background

SWANA supports the recovery of energy from solid waste as an element of integrated solid waste management. For the purposes of this policy, we are defining waste to energy (or energy from waste) as terms used to represent technologies that combust solid waste and recover energy from the waste in the form of steam, heated water or electricity. Other waste conversion technologies that do not involve combustion of the waste are not considered part of this technical policy. Waste to energy technology provides a renewable source of energy and results in net carbon reductions when compared with most other methods of waste disposal. The net carbon reduction is a result of: eliminating landfill methane emissions, recovering metals, and offsetting the burning of fossil fuels.

Policy

The use of waste to energy technology should be consistent with the USEPA's current waste management hierarchy and local government integrated solid waste management plans, that include existing and planned waste prevention, waste reduction and recycling programs. Permitting of waste to energy facilities should be consistent with the established long term needs of local government and their integrated solid waste management plans. Appropriate public policy mechanisms should be put in place to ensure the viability of waste to energy projects. Waste to energy projects are long term projects that require significant upfront capital and the economic feasibility of these projects should be reviewed by financial specialists. The full costs for the siting, design, construction and operation, including residue management and disposal, should be included in the costs assigned to a waste to energy facility, within an integrated solid waste management system. Expected revenues from sales of energy or recovered materials, as well as potential revenues related to renewable energy credits and

carbon credits should be considered as part of the full cost accounting. While combustion using mass burn or refuse derived fuel (RDF) technologies are the most common technologies used for recovering energy from solid waste, there are several new and emerging technologies that may be considered, based on the characteristics of the integrated solid waste management system and the attributes of the technology. The selection of a waste to energy technology should be consistent with best practices regarding economics, environmental performance, technical performance and public health issues. The use of waste to energy facilities should be based on the assurances that during siting, design, construction and operation, a waste to energy facility will comply with all federal, state/provincial and local government rules, regulations and permits.

The following are considered to be best practices in the planning, siting, design and operation of waste to energy facilities as part of integrated solid waste management:

1. Planning for waste to energy facilities should consider the following factors:
    - evaluation of need based on current and projected waste volumes and characteristics,
    - evaluation of the risks the community can or is willing to take,
    - evaluation of the environmental and regulatory requirements for the facility implementation,
    - evaluation of the potential delivery process and business model (Design/Build, Design Build Operate, Design Build Own Operate, etc.)
    - capability of being engineered to provide for best practices in design and operation, and to ensure compliance with all applicable environmental regulations,
    - evaluation of the environmental performance of the selected technology,
    - evaluation of compatibility with recycling and source reduction efforts in integrated solid waste plan,

- verification of the of the availability and viability of long term revenue sources for the facility products,

- evaluation of facility economics, including initial construction costs, financing costs, ongoing operational costs and revenue sources. Facility economics should consider financial return on investment on a life cycle basis and there should be a high level of confidence that projected pricing of energy and tipping fees are reasonable and consistent with market conditions,

- commercial and technical viability, and

- the use of experienced consultants and attorneys for development of appropriate procurement and contract documents.

2. Sites for waste to energy facilities should be selected based on the following principles:

   - consistency with local land use conditions and zoning codes,

   - consideration of projected waste availability and energy demand for the immediate surrounding area to minimize transportation and transmission costs,

   - siting in proximity to existing infrastructure such as roads, rail access, utilities, transmission lines, steam loops/customers, collection/transfer systems and residue reuse or disposal sites and,

   - with sufficient process to ensure adherence to environmental justice principles.

3. Facilities shall be designed by registered professional engineers and other licensed professionals, with clearly demonstrated knowledge in waste to energy facility design, and shall incorporate the following principles:

   - designed for long term operation at high availability levels,

   - designed for environmental excellence in operations, including use of energy efficient equipment, minimizing use of chemicals and water, reuse of resources within operations, zero discharge of wastewater,

- designed in a manner to maximize energy and heat recovery
- designed with a means for the measurement of incoming solid waste and out-shipped residue energy and products,
- designed with a means for the screening of incoming solid waste,
- designed to include or be a part of a system that includes household hazardous waste and electronic waste recovery programs within an integrated solid waste management program,
- designed to control run-on and run-off to minimize/prevent surface water contamination,
- designed with a means to minimize generation of and/or control emissions of green house gases and other air quality contaminants to ensure compliance with applicable regulations,
- designed to incorporate continuous emissions monitoring systems,
- designed to support the beneficial use of residue,
- designed for maximum recovery of ferrous and non-ferrous metals or other reusable materials from residue, and
- designed to allow for the safe transport and disposal of unusable residue in permitted disposal areas.

4. Construction of waste to energy facilities shall be conducted by licensed contractors familiar with industrial level energy generating facilities with appropriate construction management, monitoring and certification.
5. Waste to energy facilities should be properly commissioned and tested to confirm achievement of performance guarantees.
6. Operation of waste to energy facilities shall aspire to the following principles:
    - operated under the management of a provincial/state certified manager/operator in those provinces/states where certification is required,

- operated by a manager with certification by the appropriate entity in the appropriate category of management and operation,
- operated and maintained using an asset management program, as well as preventive and predictive maintenance programs to minimize expense and down time,
- provision that operators have access to real-time operational and emissions data to enable operation at highest standards,
- provision for ongoing training of all on-site personnel appropriate to assigned area of responsibility,
- operated with high standard safety programs focused on worker health and safety as well as the safety of customers and contractors at the facility,
- provision for controlled access to facility and use by only authorized users,
- provision for an effective inspection and monitoring program of incoming loads to detect and prevent the disposal of hazardous, undesirable, or non-permitted waste, and
- operated so that residue is managed in a manner consistent with the design and permit conditions.

Approved by the International Board
on January 12, 2012

International Secretary

Dated January 12, 2012

T-9.0 SWANA TECHNICAL POLICY

THE SANITARY LANDFILL COMPONENT OF INTEGRATED SOLID WASTE MANAGEMENT

I. POLICY

The need for continued landfilling is expected to remain in effect into the foreseeable future, though at a reduced rate due to success of diversion programs. For example, through recycling and composting the United States achieves an overall national average recycling rate of approximately 35%, with an additional 15% of municipal solid waste (MSW) reduced through waste-to-energy. The remainder, approximately 50%, is disposed of in sanitary landfills. SWANA supports sanitary landfilling as a necessary element of integrated solid waste management where these facilities:

- Operate in conformance with federal, provincial\state and local government integrated solid waste management plans and the established capacity needs;
- Establish the full costs for the siting, design, construction and operation including waste collection and transfer, closure and post-closure in the costs assigned to a sanitary landfill within an integrated solid waste management system;
- Comply with all federal, provincial/state, and local government rules, regulations and permits during siting, design, construction, operation, closure and post closure;
- Work to ensure that landfill owners and operators receive fair and equitable treatment in all regulations and regulatory activity;
- Operate to maximize their roles as a renewable resource through diversion or the on-site salvaging of discarded material for re-use or further processing, capture of landfill gas for use as a renewable fuel and, to the extent possible, serve as a resource to the local community through the development of the site for beneficial post-closure activities; and
- Operate in consideration of new and critical emerging issues, tools and technologies of importance, specifically life cycle analysis, third-party agreements, potential recycling/reuse of mined materials within landfills, use of drone technology for landfill application, bioreactor landfills and greenhouse gas regulations.

Presented below are detailed technical positions and discussions of important specific issues that support SWANA's overall policy statement.

II. Position

SWANA believes that sound and responsible sanitary landfilling includes the following best practices:

A. Selection of Sites for Sanitary Landfills

The selection of sites for sanitary landfills, and the design, construction and operating practices used at these sites, should:

- Be consistent with local land use conditions and zoning codes;
- Assure that landfill activities will not increase bird hazard risk to aircraft;
- Protect flood plains and wetlands;
- Protect against problems caused by unstable geologic settings;
- Provide for best practices in design, construction, operation and closure;
- Minimize impacts on air or water quality to the extent necessary to ensure no adverse impact to public health, safety and welfare;
- Consider impacts to region wide water resources and water supply sources; and
- Management/business criteria, including location relative to waste generators and costs of site development

B. Design of Sanitary Landfill

Sanitary landfills should be designed by, or under the supervision of, registered professional engineers and other licensed professionals with clearly demonstrated knowledge in sanitary landfill design, to meet the following performance criteria:

- Provide for controlled access to the site;
- Provide for use by individuals at convenience areas, public drop-off areas, or public use areas;
- Provide means for the measurement by weight of incoming solid waste;
- Provide means for the screening of incoming solid waste;
- Provide for control of storm water run-on and run-off;
- Provide for prevention of groundwater, surface water and air quality contamination;
- Provide for groundwater, surface water and landfill gas/air quality monitoring systems;
- Provide for the collection, recovery and management of leachate;
- Allow efficient and safe operations;
- Provide for the management and control of landfill gas, in compliance with federal, state and provincial laws;
- Provide for the recovery and flaring of the landfill gas (LFG) where necessary and, when economically feasible, provide for the utilization of LFG as an energy source;
- Provide for post-closure uses of the property to the extent locally practicable; and

- Provide design which are constructible and easy to maintain and operate. With the use of computers in landfill design, it is a good practice to provide design documentation in order to enable others to reproduce similar designs conditions for a comparable site condition.

C. Operation of Sanitary Landfills

Sanitary landfills should be operated according to the following principles:

- Operate under the management of a provincial/state/SWANA certified manager of landfill operations/operator/integrated solid waste manager;
- Provide for training of landfill best management practices for all on-site personnel;
- Provide for controlled access and use by only authorized users;
- Provide for use by individuals at convenience areas, public drop-off areas, or public use areas;
- Measure incoming solid waste by weight;
- Conduct random inspections of incoming loads of solid waste designed to detect and prevent the disposal of hazardous or unauthorized waste;
- Accept only wastes specifically allowed and included in the permit, permit conditions, or permit amendments;
- Prevent inadvertent fires from incoming combustible material, hot loads, or from uncontrolled burning of materials or vegetation in areas adjacent to the landfill;
- Provide for, where possible and permitted, the diversion, segregation and salvaging or further processing for beneficial use or recycling of waste components, such as tires, yard trimmings, electronics, scrap metals, white goods, MSW incinerator ash, concrete, asphalt, untreated wood and other inert materials;
- Provide for means and methods of implementing an emergency plan consistent with applicable laws and regulations and or with regional emergency plans;
- Have a provision to enable 'close as you go' concept for waste disposal areas in which areas which have achieved the desired and permitted final grades can be closed per regulations while other areas can be maintained at their existing status.
- Provide for the use of daily cover [earth or alternate materials];
- Provide for control of vectors and birds, as well as general nuisances such as odor, litter and noise;
- Provide, where applicable and permitted, for the control of invasive species on-site;
- Control storm water run-on and run-off;
- Prevent groundwater contamination;
- Prevent surface water contamination;
- Prevent air quality contamination; and
- Prevent the off-site migration of landfill gas.

D. Closure and Post-Closure of Sanitary Landfills

Closure and post-closure of sanitary landfills should subscribe to the following principles:

- Provide financial assurance for each individual facility for closure and post-closure care, and for identified corrective action;
- Meet closure performance standards or permit requirements;
- Minimize long-term impact after landfill closure;
- Continue maintenance and monitoring to meet permit requirements or post-closure performance standards;
- Evaluate the end use of the site in consideration of the potential damage to the final cover system and the proper removal and management of leachate and landfill gas;
- Where possible, integrate on-site beneficial use opportunities into the post-closure plan;
- Restrict access to monitoring and control systems of the closed facility to authorized personnel only; and
- Document former landfill use in property records.

III. SPECIFIC ISSUES

Landfills face increasing regulatory, operational and environmental pressures. In addition to the general position statements used to support the overall policy statement, it is also necessary to introduce and discuss several important emerging issues with which landfill owners/operators should be familiar.

In recent years the concept of life cycle analysis has become an important tool in analyzing the complex role landfills play in an integrated waste and resource management system. Also, modern landfill operations are increasingly complex. In order to maximize flexibility and operational efficiency, landfill operators often enter into complex third-party agreements for the operation of energy facilities, gas collection systems and often even the landfill itself. In addition, landfilling technology itself has advanced with the industry's experience with bioreactor landfills and or landfills with controlled liquid additions conducted to promote and accelerate biological decomposition of wastes; which has added to operational responsibilities and regulatory challenges. Finally, the new regulatory focus on controlling greenhouse gases (GHG) has added new challenges and opportunities for sanitary landfills. The following provides SWANA's perspective on each of these important issues in support of its overall policy.

A. Life Cycle Analysis

Life cycle analysis (LCA) is a means of evaluating the energy use, environmental emissions and cost of alternative MSW management practices. As communities make choices about implementing integrated solid waste management systems, planners need to understand the relative impacts of landfilling as compared to alternative practices. A landfill's environmental impact should be evaluated based upon life cycle analysis when comparing landfill performance to alternative practices.

B. Third-Party Agreements

Multiple owners and/or operators may be responsible for sanitary landfill operations. For example, the landfill could be owned by a municipality, the landfill gas collection system operated under a separate services contract, and the energy facility owned and operated by a completely separate private party. At a minimum, third-party agreements should be used to establish the basic responsibilities of environmental compliance by the multiple parties involved.

C. Bioreactor Landfills or Landfills with Accelerated Biodegradation

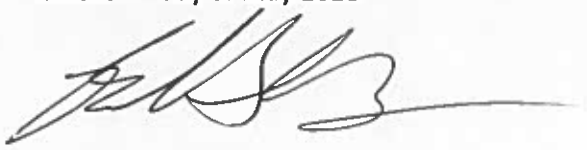
Bioreactor landfills and landfills with liquid addition conducted to promote and enhance biological decomposition can offer significant benefits with respect to environmental performance despite numerous technical and regulatory challenges. These benefits include accelerated stabilization of waste, recapture of airspace gained due to degradation and settlement of waste, reduction in magnitude of settlement following closure and lessening impact on the performance of the final cover system, reduction in leachate treatment and disposal costs during operation of the bioreactor, and potential to shorten the post-closure period. Several projects implementing these practices have been operated with varying degree of success. In general, the practical gains of gaining landfill gas reuse from the early years from landfills employing such practices needs to be evaluated against increased capital and operating efforts and costs to construct and operate these systems (leachate and or landfill gas systems) to make a site-specific determination of cost-benefits as well as environmental risks and operational efforts.

D. Greenhouse Gas Regulations

Over the last decade, focus on climate change has resulted in numerous regulatory programs throughout the U.S. and Canada that are in various stages of development. Although heavily regulated, landfills remain the third largest source of methane in the U.S. even though as an industry, landfills have reduced methane emissions by more than 30% since 1990. Landfills can be designed and operated to provide significant GHG benefits through capture and management of methane, and production of renewable energy. Federal and state programs have assisted landfill owners and or operators to implement beneficial landfill gas reuse programs.

CERTIFIED to be correct and complete statement of the approved policy.

UPDATED and APPROVED by the International Board
on the 4th day of May 2018



Brenda A. Haney, P.E.
International Secretary

Originally adopted by the International Board, 12 December 2011

T-9.1: Providing Financial Assurance for Municipal Solid Waste Management Disposal Facilities

T-9.1 SWANA TECHNICAL POLICY

PROVIDING FINANCIAL ASSURANCE FOR
MUNICIPAL SOLID WASTE MANAGEMENT DISPOSAL FACILITIES

I. POLICY

SWANA fully supports regulations that establish reasonable requirements for financial assurance for:

- Corrective Action During the Active Life of a Disposal Facility
- Closure
- Post-Closure Care and Monitoring
- Post-Closure Corrective Action

Long-term management is a new policy that is still in draft format.

Of the options available for demonstrating financial assurance, SWANA believes that, while any of the options discussed may meet the needs of financial assurance, the utilization of trust funds offers the most fair and equitable means to assure the availability of adequate and guaranteed funds at the time they are needed.

Trust funds provide a funding method whereby the issue of ownership is not a factor.

Trust fund deposits can be raised through direct charges to the users of a disposal facility who in turn will direct those charges back to the generators. Thus, generators of the waste will pay all costs associated with current disposal as well as long-term security of the disposal facility.

Owners who do not charge a gate fee can still annually provide deposits into a trust fund for the variety of activities requiring financial assurance. In the case of either the public sector or the private sector those funds would come from the revenue sources that are the basis for their annual operating budgets.

A trust fund should be established for all the activities listed above and should be funded based on a financial plan for the life of the facility. The plans should include the investments of deposited funds in secure assets with restrictions on withdrawal and use of the funds and their earnings.

In order to assure the complete integrity of the trust funds, state/provincial agencies should be authorized to maintain oversight over all funds established. While the funds would remain in the administrative and management hands of individual facility owners, their integrity must be assured. Much like a banking regulatory agency, states/provinces/governments should establish rules and policies for the administration of such funds, provide oversight on establishing deposit dates for the fund, and see that the rules and policies are followed by those who have established the trust funds. The organization establishing a trust fund should have reasonable discretion to supervise and manage the funds subject to limitations necessary to protect the fund. When the post-closure term is completed, and all obligations fulfilled, any balance of monies remaining in the fund should be returned to the organization establishing the fund.

II. BACKGROUND

The management of municipal solid waste utilizes a number of intermediate steps (collection, curbside recycling, transfer, materials recovery, combustion, etc.) before some portion of the solid waste is presented for final disposal in a landfill. In addition, several of the processes result in residue that must also be disposed of in a landfill. Finally, there are components of the municipal solid waste stream that will always go to a landfill for disposal.

The regulations for disposal facilities (landfills) will not become any less complicated or costly. Operating financial assurance, post-closure care funding, and long-term care are a significant part of the cost of doing business. Corrective or remedial action-steps are a completely open-ended liability that is all too common in pre-regulation facilities.

- Operating financial assurance: These are funds that are available to close a facility in the event of a financial or operational collapse of the operator. It includes closure/post-closure activities costs associated with the closure and post-closure care of a landfill. Expenditures experienced after the facility stops taking materials in are estimated. This cost is usually associated with maintenance of the facility and environmental monitoring.
- Long-term management: These costs are just beginning to be defined. The liability of landfill that has been closed for more than 30 years is very real and site specific. Failure of systems components and applying current standards to old facilities is the worst-case scenario. Evaluating the facility and applying measures that protect public health and the environment is the best available option.

All of these requirements obligate financial resources. Most require resources after a landfill is closed and is no longer generating revenue or is no longer an active part of an operating budget of a landfill owner/operator. In addition, corrective or remedial action activities may occur during the active life of a landfill and continue indefinitely.

The costs for these activities has prompted a need for substantial financial resources. The requirement for such financial resources is referred to in summary as "financial assurance". This policy addresses financial assurance for municipal solid waste management disposal facilities.

II. DISCUSSION

Financial assurance for both operating and closed disposal facilities requires financial assurance as defined by the EPA division or by the state or province, in which the facility is operating in. When planning a facility, it is imperative that the owner of the facility carefully evaluate the types/methods of financial assurance mechanism that the local regulators will accept/approve. There are significant variations between different states and provinces.

A. Active Landfills

During the active life of a landfill, funds for corrective action, and environmental monitoring are raised by tipping fees or taxes.

Corrective action, during operation, is a cost of doing business. Owner/operators are required to develop a plan for corrective action and for financing corrective action, closure and pre-closure environmental monitoring. Demonstration of long-term financial viability is required throughout the active life of the landfill.

B. Closed Landfills

There are four programs associated with closing and maintaining closed landfills that require financial assurance:

1. Closure: All steps necessary to complete final closure of a landfill (final closure means a landfill, or a portion of a landfill, which no longer will receive solid waste). Closure is a continuing process that is predicated by the design.
2. Post-Closure Care: All steps necessary to inspect and maintain the final cover system, operate the leachate and landfill gas collection and control system, maintain the stormwater management system, other environmental monitoring and control systems; the costs for sampling and analyzing groundwater, leachate, and gas; and the reporting of the findings to the owner/operator (trustee for the facility) and the regulatory agency.
3. Post-Closure Corrective or Remedial Actions: All steps necessary to correct any variation of the closure requirements relative to groundwater or gas.
4. Long-term Management: Liability experienced after the 30 (or more) year post closure limits.

A discussion of financing each of these programs follows.

1. Closure

Closure is a process that can be determined and predicted during the design of a new facility. Closure design should be a part of any permit application for a new facility or an extension to an existing facility and in the case of existing facilities should be required in order to maintain an active permit.

Therefore, financial assurance for closure is an economic and engineering consideration that can be predicted and built into the financial plan for the facility as a part of its operating budget. In the operating budget of a new landfill one should identify and establish an account for closure to assure that the resources are available whenever a portion is closed.

For those existing facilities that have not been able to accrue funds during the full life of the facility, the funds for closure will have to be collected and accelerated during the remaining time of operation. Annual estimates of closure costs should be made, and the financial assurance mechanism(s) should be adjusted accordingly.

2. Post-Closure Care

Post-closure care can encompass a number of processes depending upon the type of facility. The following is an illustrative list of the types of processes that would be part of post-closure care:

a) Inspection and care of the final cap to assure grade, vegetation, and integrity
b) Operation and maintenance of a landfill gas management system
c) Operation and maintenance of a leachate management system
d) Operation and maintenance of the monitoring systems for landfill gas, surface water and groundwater
e) Post-closure environmental monitoring

Funds for these activities cannot be raised through the operations of the landfill after the facility is closed. Therefore, post closure funds should be included in gate fees and set aside in protected financial reserve accounts. Annual estimates of post-closure costs should be made, and the financial assurance mechanism(s) should be adjusted accordingly.

The cost for post-closure monitoring of groundwater, surface water and landfill gas will have to be funded in much the same manner as for post-closure maintenance. Since it is a post-closure activity, the funds should be raised during the operational phase or through some other means acceptable to a regulatory agency prior to the issuance or continuation of a permit to operate a landfill.

The costs for post-closure care can incorporate appropriate and supportable reduction to operating costs over time, as leachate and landfill gas generation rates will decrease over time following closure. The estimated annual costs for post-closure environmental monitoring may assume reductions over time, (i.e. reduction in frequency of groundwater sampling or gas migration probe sampling) as the closed landfill moves toward meeting the performance standards for reduction or elimination of leachate and landfill gas generation. Any reduction in frequency will need to be approved by the regulatory agency and supported by trends in the environmental data.

3. Post-Closure Corrective and Remedial Action

This regulatory requirement is perhaps the most difficult to predict. Therefore, it is the most difficult for which to provide a plan to assure adequate funds. The funding plan must assure the availability of enough money to take the necessary corrective action steps to bring a closed facility back into compliance with environmental requirements. Consequently, financial assurance for post-closure corrective action must receive special attention from the owner/operator and the regulatory agency.

4. Long-Term Management

This is the cost necessary to protect the environment after the post-closure period has passed.

C. Demonstrating Financial Assurance

There are limited options for demonstrating financial assurance. All of these options may have applicability for specific landfill facilities. A discussion of each of the more applicable options follows:

1. Letters of Credit

Letters of credit are commitments from third parties, usually commercial banks, to provide monies when and if needed pursuant to terms of the credit agreement signed with the bank.

If a letter of credit is utilized, the letter of credit bank, in effect, guarantees the payment. In the alternative, the letter of credit would guarantee that if the funds that are intended to be available from a trust fund are insufficient, it will make whole the deficient amount. The letter of credit, which will run to a trustee, represents an unconditional commitment on the part of the bank to pay to the trustee monies due upon demand.

The credit rating of the bank is an important consideration in selecting a letter of credit provider. This is because the bank's credit rating will be substituted for the rating of the municipality or the company. However, the substitution of the bank's credit rating occurs only if the bank's commitment to pay is irrevocable and otherwise unconditional. Each regulatory agency has their requirements for letters of credit.

2. Bonds

Local government General Obligation bonds are generally too expensive and cumbersome for financial assurance. Surety bonds are being used by several states. Bonds for private facilities are expensive and require significant collateral.

3. *Financial Test*

Municipal authorities and other entities such as county or city government can utilize financial tests as defined by the regulatory agency or EPA to meet the requirements of financial assurance.

4. *Trust Funds*

This approach raises funds through a number of means that clearly identifies the funds for a specific purpose and isolates those funds for that purpose only. The authority for trust funds and their operating procedures should be based on state or provincial regulations. Those regulations must address such issues as funding, investment, expenditure, and disposition of the fund at the end of the post-closure period.

Trust funds have the advantage of being available to all owners. Trust funds offer assurance to the public that there will be funds when needed. In the case of disposal facilities, funds would be raised by charges to the users of such facilities. In the case of facilities that operate partially or totally on gate fees, such fees would have to be increased to provide monies to the trust fund. Where facilities operate with funding through contracts or tax revenue, funding must be included in the operating budgets to provide monies for the trust fund. In either case, the significant point in favor of trust funds is that the cost for the required funds are paid by the generators of the waste going into the facility. Trust funds, even with the difficulty of structure ownership of the dollar resources, etc. are a very attractive option for financial assurance.

CERTIFIED to be correct and complete statement of the approved policy.

UPDATED and APPROVED by the International Board
on the 4th day of May 2018

Brenda A. Haney, P.E.
International Secretary

Originally adopted by the International Board, 19 August 1990

Modified 13 June 1994

T-9.2 SWANA TECHNICAL POLICY

ALTERNATIVE DAILY COVER MATERIALS FOR SANITARY LANDFILLS

I. POLICY

SWANA supports the appropriate use of field proven alternative daily cover materials (ADCs) for sanitary landfills. Such usage should be based on site-specific characteristics of each disposal site and applicable provincial, state or local government rules and regulations. The use of ADCs, as a substitute for compacted soil, should be based upon economic analysis, performance of the ADC material to prevent nuisances and provide protection of human health and environmental quality under specific site conditions and other complementary management practices which achieve comparable results similar to that of soil.

II. DISCUSSION

A. The Value of Daily Cover

In sanitary landfill design and operation, daily cover of six (6) inches [15 centimeters]* of compacted soil has been the standard of practice for well over 30 years. Soil cover continues to be used extensively today. The use of six (6) inches of compacted soil as daily cover was adopted based on the understanding that six (6) inches of compacted soil cover represents the practical minimum depth that can be placed over solid waste to prevent the emergence of adult flies from the landfilled solid waste mass. When implemented properly, this practice achieves a basic objective of protection of human health. Albeit, six (6) inches of compacted soil daily cover also provides several other beneficial functions as follows:

1. Additional vector control - six (6) inches of compacted soil reduces available breeding sites for mosquitoes and discourages solid waste from serving as an attractant to domestic/feral and wild animals.
2. Fire control - six (6) inches of compacted soil reduces the potential for, and movement of, fires within a landfill.
3. Litter control - six (6) inches of compacted soil helps to control blowing litter.
4. Odor control - six (6) inches of compacted soil serves as an odor barrier/or filter for odors emanating from solid waste.
5. Aesthetics - six (6) inches of compacted soil covering at the end of each working day, or more frequently, improves the aesthetics for site users and neighbors. Further, daily cover reinforces the perception of a sanitary landfill as opposed to open dumps.

Run-on/Run-off - six (6) inches of compacted soils serves to reduce the infiltration of storm water run-on into the filled mass of solid waste and helps to increase run-off of precipitation thereby reducing the production of leachate which can be costly to treat and dispose.

B. Further Considerations

Advancements in the field of solid waste management has led to the emergence of daily cover materials other than six (6) inches of compacted soil. These materials include composted green wastes, MSW derived compost, sewage sludge compost, foam, tarps, shredded tires, select processed construction and demolition (C&D) waste, and certain industrial materials to mention a few. The end result is that a wide range of products, materials and operational practices have been introduced as ADCs. The biggest advantage of ADCs is the conservation of airspace.

ADCs can be classified as either waste-derived materials or non-waste-derived materials. Waste-derived materials include ash, auto shredder fluff, MSW derived compost, digested waste, select processed C&D waste, composted green waste, contaminated sediment and soil, composted sewage sludge, and shredded tires. Certain waste derived ADCs can be additional source of revenue for a facility, and some jurisdictions also count this material toward diversion, recycling or beneficial use goals. Most waste ADCs should be tested for hazardous properties prior to using them. It is even more critical to test for hazardous properties if they are not a typical waste stream of the facility and their composition is unknown – for either disposal or ADC use.

Non-waste-derived material can generally be classified into two groups: spray-on materials and re-usable geosynthetic materials or tarps. These types of ADCs use very little or no airspace and in the case of the spray on materials, beneficially reuse latex paint waste. They do however have a financial cost as compared to other revenue generating waste-derived ADCs.

One of the other advantages of using ADCs relates to the management of landfill gas and leachate. Using non-waste derived ADCs means reducing the amount of soil in your landfill. This helps with landfill gas and leachate flow by removing potential barriers to their free movement within the waste. This can result in higher landfill gas flow rates, which in turn may also increase revenue from captured landfill gas. It can also facilitate the flow of leachate through the waste mass to the collection layer, minimizing the potential for leachate seeps that cause operational and regulatory headaches. The use of waste derived compost and sewage sludge compost as ADC has been proven to oxidize methane up to 100%. Therefore, these waste derived ADC materials offer dramatic benefit to the reduction of greenhouse gases as compared to six (6) inches of soil. The use of composts – either waste or non-waste derived, have the capability of absorbing far more moisture than conventional soils thus offering the benefit of storm water control.

Locally available materials, local climatic conditions and site-specific characteristics will guide which ADCs will and will not work at a particular site. It will take a significant amount of experience on the part of a landfill manager to determine whether a particular ADC will work at their specific site. Landfill managers should collect data, meet with regulators, and talk with their peers, and pilot test the use of ADCs before deciding on their use in lieu of traditional compacted soil cover.

Other issues specific to ADCs include:

> **Six inches of compacted soil uses up valuable space in a landfill:** Landfills are in the business of utilizing space. Efforts to maximize the use of space should be explored. Arguments are presented that the use of six (6) inches of compacted soil as daily cover consumes up to 20-25 percent of the space in a landfill. Some suggest that six inches of compacted soil daily cover merely fills the voids in the solid waste mass, and when buried with sufficient amounts of solid waste does not significantly reduce the volume available for solid waste. However, solid waste that is adequately compacted to densities in excess of 1400 pounds per cubic yard [830 kilograms per cubic meter] may not have a significant volume of voids. Further, due to the uneven surface of the compacted waste materials, in order to place a competent layer of six (6) inches of soil cover, much more volume of soil is actually required than would be calculated for six (6) inches times the active area.

Soil can be very expensive: When landfill owners/operators do not have sufficient soil on- site for daily cover and must purchase and import cover materials, it can represent significant increased operating costs. Hauling cover from off-site also increases traffic, road wear and tear, increased fuel consumption and increased air emissions. Alternate daily cover materials, which may be less expensive than importing soil to a site, could significantly reduce the overall operating costs for landfill operations.

Design considerations: Today's sanitary landfills are designed and constructed to allow for the collection and/or control of leachate and landfill gas. Impediments to the movement of landfill gas and leachate may affect the intended design or function of the collection and/or control system.

CERTIFIED to be correct and complete statement of the approved policy.

UPDATED and APPROVED by the International Board
on the 4th day of May 2018

Brenda A. Haney, P.E.
International Secretary

Originally adopted by the International Board, 20 September 1996

T-9.2: Termination of Municipal Solid Waste Landfill Post-Closure Care Requirements T-9.3 SWANA TECHNICAL POLICY

TERMINATION OF MUNICIPAL SOLID WASTE LANDFILL POST-CLOSURE CARE REQUIREMENTS

I. POLICY

SWANA supports the use of a performance-based evaluation process for considering the termination of regulatory post-closure care (PCC) of municipal solid waste landfills (MSWLFs), provided that it clearly identifies the criteria for demonstrating protection of human health and the environment (HHE) in the absence of active control systems for leachate and landfill gas. In order to effectively evaluate and determine the requisite length of a MSWLF's PCC period, state programs should incorporate three (3) fundamental principles in developing their guidance and/or regulations.

(1) The regulatory PCC period should have a finite term with the length determined on a site-specific basis;

(2) The conduct of a performance-based evaluation of the closed MSWLF that relies on the collection and analysis of site-specific data over a defined period can be an effective means of establishing the requisite length of the PCC period on a scientific basis; and

(3) The identification and weighting of performance-based criteria should be established along with the technical evaluation approach with input and consensus from appropriate stakeholders.

II. DISCUSSION

A. Background

The Resource Conservation and Recovery Act (RCRA), Subtitle D Criteria for Municipal Solid Waste Landfills establishes a required PCC period of thirty (30) years (CFR Title 40 § 258.61). However, the regulations also stipulated that the period can be increased or decreased to protect HHE as determined by an approved state. As written, the regulation does not include guidance on assessing impacts on HHE, nor determining whether or on what basis an increase or decrease to the 30-year PPC period should be made.

In this regard, the development of a concise and widely accepted methodology for measuring potential impacts to HHE and determining how those impacts relate to setting the appropriate PCC period is warranted. Establishing this methodology will allow facility managers to plan effectively for collecting the information necessary to demonstrate the site is protective of HHE and to support the appropriate termination of the PCC period.

While EPA (2016) developed guidelines for evaluating PCC timeframes for hazardous waste disposal facilities under RCRA Subtitle C (CFR Title 40 § 265), it has not prepared similar guidance for evaluating PCC at Subtitle D landfill facilities. Therefore, each approved state remains responsible for developing its own policies and regulations, and, as a result, a number of states have taken different approaches to determining when to terminate PCC. The two most common approaches are to terminate PCC when the waste achieves organic stability, or when the landfill achieves functional stability. Both approaches have significant data collection requirements during a landfill's operating and PCC periods to support termination of the PCC period.

B. Current Approaches

States are increasingly utilizing landfill stability to determine PCC requirements. Two approaches that are commonly considered to represent protection of HHE are organic stability or functional stability, which are defined as follows:

- Organic stability – The goal of organic stability is to ensure that the landfilled waste mass has been biodegraded to the point that human health, environmental, and financial risks associated with the potential exposure to the remaining undecomposed waste are minimal. To achieve organic stability over the planned PCC period, a landfill owner or operator may need to work with their customers to undertake upstream organic waste diversion to reduce the amount of degradable material disposed in the landfill, conduct pre-processing of waste materials through thermal, biological or physical means while the landfill is still accepting waste, and/or complete some form of in-situ treatment via leachate recirculation or bioreactor landfill operation to enhance degradation of the organic materials during its active life.

- Functional stability – a landfill is commonly considered to be functionally stable and protective of HHE when it has been demonstrated that HHE will be protected when the landfill's active control systems such as landfill gas collection or leachate collection are turned off and only the landfill's passive control systems – such as the final cover system are functioning. This requires the collection and analysis of data for leachate, landfill gas, and cover settlement to demonstrate a "predictable steady-state" such that an evaluation of a future threat to a potential receptor based upon a specific end-use and surrounding land use can be developed with confidence. Under a functional stability approach, a landfill facility would rely on the natural degradation of the waste materials during operating and PCC periods to achieve the steady state conditions to justify the termination of PCC.

  It is important to understand that functional stability relies on the effective and continued operation of the landfill's passive control systems – specifically the final cover system. If the final cover system does not perform as prescribed, the landfill may cease to be functionally stable. In addition, a functional stability analysis is based on certain assumptions regarding land use and population densities and characteristics around the closed site that may change in the future. Evaluation of termination of PCC of a functionally stable landfill should include conservative assumptions for future changes to land use and population with respect to proximity and types of potential receptors.

In the absence of an US EPA-approved approach to terminating PCC, some states have developed their own methods to terminate regulatory PCC. A few examples are included below.

Florida

In 2016, the State of Florida issued a guidance on long-term care (LTC) at solid waste disposal facilities. LTC is essentially the same as the PCC period described by the federal regulations. This guidance applies to municipal solid waste landfills as well as other solid waste facilities such as construction and demolition debris landfills. In considering how to terminate LTC for lined disposal facilities, Florida considers the potential for using performance-based methodology. They acknowledge that the approach focuses on when a facility reaches functional stability. While not completely inert, functional stability is found when the facility does not pose an unacceptable threat to HHE in the absence of active controls (i.e., leachate collection, landfill gas collection and control, etc.). Following achievement of functional stability, a facility can be moved to custodial care. Custodial care is the term used by Florida to describe the property management period following LTC.

Demonstration of functional stability can be achieved by addressing four components: leachate management, gas control, groundwater monitoring and maintenance of the final cover. The guidance provides clear criteria for establishing functional stability for each of the components.

Kansas

The State of Kansas developed one policy and three technical guidance documents in 2013 and 2014 outlining data collection requirements for ultimate reduction or termination of the PCC period with an organic stability target in its current form. Kansas considers achieving stability in the context of key monitoring parameters to be important to reducing or terminating PCC. Part of their analysis would be conducting trend analysis and collecting data to support the determination.

Washington

Washington revised their closure and PCC regulations in November 2012. Under the new regulations, a landfill is functionally stable when it does not present a threat to HHE at the point of exposure (POE) for humans or environmental receptors. To determine this, the landfill should assess potential threats to HHE by considering leachate production and quality, LFG production and composition, cover system integrity, and groundwater quality.

Wisconsin

Wisconsin developed their guidance in 2006, before most of the other states. The state focuses on organic stability instead of functional stability. It proposes organics diversion, mechanical or biological treatment or in-landfill treatment to achieve organic stability. The rule required existing landfills that had not filled 50 percent or more of their approved capacity by January 1, 2012, to submit a plan modification by that date to implement organic stability measures. The rule also required that operation plans include organic stability plans for all new landfills or landfill expansions submitted for review after January 1, 2007.

C. Data Requirements

To implement either functional or organic stability objectives, significant supporting data are required. The type of data and frequency of collection will depend on the site-specific evaluation criteria established. In general, most states with PCC termination programs require that landfills should demonstrate stability in four areas: groundwater quality; landfill gas generation; leachate quantity and quality; and cover integrity. Once a state of long-term protection of HHE is demonstrated, states may approve a reduction or terminate the PCC period, including cessation of data acquisition and active controls.

Below are some considerations for demonstrating stability for groundwater monitoring; landfill gas; leachate; and stability and cover integrity based on the variety of state PCC termination approaches.

Groundwater Monitoring – landfills should provide information over time to demonstrate groundwater parameters are being met or are below the established regulatory threshold. This data should also be used after terminating active controls to confirm continued compliance. Landfills should determine what data are necessary to demonstrate that the other control systems and/or waste mass have achieved stability including:

- Frequency of measurement; and
- Indicator parameters suitable for measuring impact from a relatively degraded waste mass.

Landfill Gas – landfills should demonstrate that gas generation is decreasing, and the facility does not pose an unacceptable risk to HHE at the POE. Landfills should determine what data from the waste mass (e.g., extraction wells, vents, or at a flare) are necessary to be able to demonstrate landfill gas stability, including, but not limited to:

- Methane migration;
- Methane flow;
- Temperature; and
- Methane and carbon dioxide concentrations.

Leachate – landfills should demonstrate that the leachate quality and quantity is stable or improving and that leachate, should it reach the POE, does not pose an unacceptable risk to HHE at that location. The following information represents the minimum data set that should be collected over time from sumps and/or tanks:

- Biochemical oxygen demand (BOD) and chemical oxygen demand (COD);
- Ammonia; and
- pH.

Stability and Cover Integrity – landfills should provide data over a time period demonstrating that the cover is performing well in controlling gas emissions and migration, it has substantially reduced leachate generation, and that settlement rates are within acceptable parameters in order to minimize any impact on the final cover. Provide supporting information that stormwater management system including drainage benches, swales, down chutes and piped let-down structures are adequate for long-term management of stormwater run-off and protect the final cover system from erosion.

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CERTIFIED to be correct and complete statement of the approved policy.

APPROVED by the International Board
on the 11th day of January 2019

Timothy S. Flanagan
International Secretary

T-9.4 SWANA TECHNICAL POLICY

THE LONG-TERM MANAGEMENT OF MUNICIPAL SOLID WASTE LANDFILLS

I. POLICY

SWANA supports the following policy positions related to the long-term management (LTM) of municipal solid waste landfills:

1. Following termination of regulatory post-closure care (PCC) period, as recommended in T-9.3 Termination of Municipal Solid Waste Landfill Post-Closure Care Requirements, there should be provisions or institutional controls satisfactory to state, provincial or local regulatory agencies to provide LTM for closed landfills to ensure the final landfill cover system and other environmental control systems are effective in continuing to be protective of human health and the environment. These provisions may be developed through instruments, such as deed restrictions, environmental covenants (such as those in compliance with the Unified Environmental Covenants Act), and/or a maximum of standard landfill regulatory oversight, to be determined on a case-by-case basis, based in part on the risk potential of the landfill.

2. Regulatory agencies and landfill owner/operator should recognize that there are potential costs associated with facilities in LTM, including but not limited to inspections to verify the integrity of the landfill cover system and other environmental control systems, and/or corrective actions. Provisions identifying responsible parties for these costs should exist on a case-by-case basis as determined by the regulatory agency, landfill owner /operator, and/or host community, as applicable.

3. The LTM of a landfill facility may cease provided all parties involved (owner, municipality and state and provincial regulatory agencies) agree that based on site-specific data, that the organic or functionally stabilized waste mass poses an acceptable level of risk to potential receptors.

II. DISCUSSION

SWANA believes that LTM responsibilities are likely to extend beyond the end of the PCC period of landfills. Following approval of the termination of the PCC period by the applicable regulatory agency, it is likely that the owner/operator may no longer be actively operating, or phasing out operation of the leachate collection and treatment systems, completing landfill gas collection and monitoring, and conducting groundwater monitoring.

Few regulatory agencies have established specific requirements or guidance on what LTM would entail. There are however a couple of examples where state agencies have or are beginning to address LTM requirements.[1,2].

[1] The State of Florida guidance recognizes that once a landfill reaches stability, then PCC is complete and the facility can move into non-regulatory, "custodial" care. This level of care could include management activities such as: protecting the final cover, controlling site access, or maintaining institutional controls, if appropriate. See Florida DEP. (2016, February 20). LTC at Solid Waste Disposal Facilities. Guidance Document SWM-04.45.

[2] In June 2019, the State of Ohio released a draft guidance document entitled, "Process for Ending of Post-Closure Care at Solid Waste Landfills". The state proposes to recognize a landowner's obligation to ensure any threat to human health or the environment will be mitigated and includes requirements for maintaining the integrity of the final cover system and

SWANA believes that the potential of a closed landfill to impact human health and the environment, under most circumstances, may continue beyond the PCC period depending on site-specific conditions, including distance to nearby potential receptors. The risk to human health and the environment is primarily a function of the degree of degradation of the waste mass, and the long-term performance of the final landfill cover systems to restrict the introduction of liquid into the underlying solid waste materials. Since a fundamental premise of solid waste regulations is that the closed landfill serves to contain or entomb the waste in a relatively dry state, maintenance of the final landfill cover system beyond the PCC period is essential to control the long-term threat potential of the remaining un-degraded waste mass.

CERTIFIED to be correct and complete statement of the approved policy.

APPROVED by the Board
on the 6th day of December 2019

Art Mercer
Secretary

adhering to institutional controls established on the property. See https://www.epa.ohio.gov/dmwm/#1127910587-june-27-2019--dmwm-releases-draft-guidance-for-ending-post-closure-care

SWANA TECHNICAL POLICY T-10

SAFE DISPOSAL OF HOUSEHOLD PHARMACEUTICALS

I. Background

Two major concerns dominate the discussion of household pharmaceutical[1] disposal:

1. Water pollution, and
2. Drug abuse

1. **Water Pollution.** Water pollution is the first concern about individuals' disposal of pharmaceuticals in their homes. Historically, household residents flush their unused medication down toilets and sinks into the municipal wastewater treatment system. People and animals also excrete pharmaceutical components in their waste, which can travel to ground, surface, and drinking water.

   Recently, scientists have been able to measure chemical content in water with greater precision. Tests now detect more chemicals, including common pharmaceutical compounds, at low concentrations in surface and drinking water. Scientists have also conducted extensive research, identifying pharmaceutical components in streams, water treatment plants and landfill leachate; and examining those pharmaceuticals effect on plants and animals. Specific research examples find that discarded pharmaceuticals impact fish. Research continues. What *kinds* of pharmaceutical components dissolve in waste water? *How long* does it take them to dissipate (for example, downstream of a water treatment plant or in a lined landfill's leachate)? What are the economic externalities of different disposal methods, the impact on fuel resources, air, water, and ground?[2]

[1] When this policy paper uses the words "pharmaceutical waste" it means not only the drug as produced and prescribed, but its subsequent components after disposal ("active pharmaceutical components" or APIs). It includes both prescription and over-the-counter drugs and dietary supplements in any form (liquids; tablets, capsules, lozenges, gum; lotions, ointments; antiseptics.

[2] Keep current with research reports at the USGS website / Water Toxicity / Science page.

See USGS Technical Announcement: Pharmaceuticals and Other Chemicals Common in Landfill Waste (August 11, 2014), http://toxics.usgs.gov/highlights/2014-08-12-leachate_pharm.html

The U.S. Environmental Protection Agency (EPA) is the primary governmental agency that regulates water quality, including consequences of disposing pharmaceutical components into ground, surface, or waste water. In Canada, regulation of water quality lies with the Provinces and Territories in partnership with the Federal Government.

2. Drug Abuse. Drug Abuse is the second major concern about disposal of household pharmaceuticals. The nation is experiencing increased diversion and abuse of unused or expired medication stored in home medicine cabinets, including accidental poisonings (overdoses) and abuse (recreational use). The U.S. Drug Enforcement Agency (DEA) wants residents to dispose of unused or expired drugs in their medicine cabinets as quickly as possible.[3]

   The DEA and U.S. Food and Drug Administration (FDA) are the primary governmental agencies that regulate pharmaceuticals, especially "controlled substances" such as opiates and pain relievers.

II. Discussion: Household-Residents' Disposal Options

MSW Stakeholders. Stakeholders in the discussion of household pharmaceutical disposal include state and local governments, the pharmaceutical industry, environmental and health organizations, citizens, and the solid waste management industry. MSW management includes:

1. Incinerators: medical waste incinerators (MWI) or waste-to-energy (WTE) facilities. As discussed below, incineration is the preferred form of pharmaceutical destruction;
2. HHW: Household hazardous waste collection. Some HHW facilities operated by MSW managers accept medications that are not "controlled substances" regulated by the DEA.
3. Landfills: Subtitle D / lined landfills, (or Canadian Equivalent), the EPA's, DEA's, and FDA's second choice (after take-back/incineration) for pharmaceutical disposal. (Although the FDA nevertheless recommends flushing listed medications such as opiates and pain killers that pose significant dangers to health if abused.)

#1: Incineration. Communities do not have to incinerate discarded pharmaceuticals in a hazardous waste facility, either under law or to address safety.

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[3] 2016. **National Institute on Drug Abuse,** Prescription Drug Abuse, NIDA website, https://www.drugabuse.gov/publications/research-reports/prescription-drugs/director

- **Legal.** EPA stringently regulates emissions from MWIs (or WTE facilities). The EPA excludes pharmaceuticals from regulation as a hazardous material under the Resource Conservation and Recovery Act (RCRA). (States may adopt this exclusion.)
- **Safe.** MWIs (and WTE) facilities destroy pharmaceutical components effectively.

If communities incinerate their municipal solid waste, their residents can discard household pharmaceuticals in the trash. (This option assumes that the state excludes pharmaceuticals as "hazardous waste" under RCRA, as has the federal EPA.)

#2: **Product Stewardship / Take-Back Programs + Incineration.** If communities do not incinerate their municipal waste, the EPA[4]., DEA[5] and FDA,[6] and Government of Canada[7] recommend that residents dispose of their personal medicines in take-back programs that will subsequently incinerate them. (The FDA nevertheless continues to recommend flushing 45 listed-drugs in the toilet. [8])

The DEA has authorized law enforcement agencies to accept pharmaceuticals, including controlled substances, for many years. Increasingly, local governments are enacting framework for pharmaceutical take-back programs, such as vanguard programs in Alameda

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[4] **EPA Proposed Rule. Proposed Management Standards for Hazardous Waste Pharmaceuticals: EPA Rule,** published it in the *Federal Register* on September 25, 2015, https://www.federalregister.gov/articles/2015/11/05/2015-28100/management-standards-for-hazardous-waste-pharmaceuticals.

[5] **DEA Rule**. Rule under the Secure and Responsible Drug Disposal Act of 2010, "***Disposal of Controlled Substances"*** Federal Register Vol.79, No. 174, Tuesday, September 9, 2014, page 53529; ww.deadiversion.usdoj.gov/fed_regs/rules/2014/2014-20926.pdf

[6] **FDA Guidelines**. U.S. **Food and Drug Administration**, Drug Disposal Guidelines, ***"How to Dispose of Unused Medicines"*** http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm101653.htm

[7] Safe Disposal of prescription drugs, **Government of Canada**, Gouvernement du Canada, http://healthycanadians.gc.ca/drugs-products-medicaments-produits/buying-using-achat-utilisation/disposal-defaire-eng.php.

For description of take-back programs in Canadian Provinces and Territories, see also: http://www.healthsteward.ca/

[8] **FDA** U.S. **Food and Drug Administration**, "***Medicines Recommended for Disposal by Flushing***", http://www.fda.gov/downloads/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/EnsuringSafeUseofMedicine/SafeDisposalofMedicines/UCM337803.pdf

County, CA[9] (and several other CA counties) and King County, WA. Some pharmacies are conducting pilot programs to accept drugs at kiosks in their retail stores.

The ideal pharmaceutical takeback program has the following characteristics. It is:

- convenient; (drop-off locations at pharmacies; mail back for the homebound)
- safe (chain-of-possession / manifests from take-back center to disposal; incineration);
- cost effective (using existing transportation), but also without charge to residents (no drop-off fee);
- available to the entire population, including the disabled or home-bound (public education); and
- include criteria to measure program success

#3. Trash Disposal in a Subtitle D, MSW Landfill. If incineration or take-back programs are unavailable, residents should discard their personal drugs in household trash for ultimate disposal in Subtitle D-regulated MSW landfills (or Canadian Equivalents). Although research continues (see above), both the USEPA and pharmaceutical companies have conducted research that showed:

- very low levels of active pharmaceutics ingredients (APIs) in landfill leachate that they cannot measure confidently with current analytical equipment; and furthermore,
- negligible amount of landfill leachate leak into to groundwater and surface water (although landfill operators might send leachate to waste water treatment plants.)

Regardless, discarding medications in lined landfills will result in less discharge of active pharmaceutical ingredients into surface water than would flushing them into sewage systems.

III. Policy Position

SWANA, as an organization of solid waste professionals, supports the following policy positions on responsible disposal of unused or expired pharmaceuticals:

- **Pharmaceutical Disposal Hierarchy**

[9] Alameda County, CA adopted and is implementing a take-back program that the 9th Circuit upheld against allegations of discrimination by pharmaceutical trade organizations. It also found that the program did not substantially burden interstate commerce. Benefits to the local community outweighed any incidental burdens. (This is referred to in Commerce Clause cases as "the Pike balancing test", first articulated in Pike V. Bruce Church, Inc. 307 137 (1970)).

(1) Take-back Programs + Incineration. Communities should work with the pharmaceutical industry (manufacturers, distributers, pharmacies / retailers), interested organizations, individuals, and other stakeholders to develop take-back programs as part of product stewardship. They should destroy the collected pharmaceuticals in MWI (or WTE facilities).

(2) Incineration. Communities that dispose of their municipal solid waste at a MWI or WTE facility can allow their residents to discard pharmaceuticals in household trash.

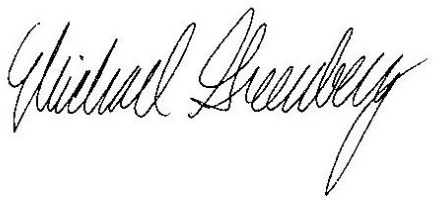
(3) Lined Landfills. Until communities have convenient, safe, cost-effective, and available take-back programs they should educate the public to mix waste pharmaceuticals with contaminants (coffee grounds, cat litter) and dispose of them in non-descript containers with household trash.

- No flushing.

(1) Public Education. Communities should educate their residents not to discard and flush pharmaceuticals into the public sewer system.

(2) FDA Recommendation. Communities should encourage the FDA to abandon its recommendation to flush listed pharmaceuticals.

Approved by the International Board on
July 6, 2017.



Michael Greenberg, International Secretary
Dated July 6, 2017

T-11

SWANA TECHNICAL POLICY
"CONVERSION TECHNOLOGIES"
AS PART OF
INTEGRATED SOLID WASTE MANAGEMENT

Policy

SWANA supports the development of "Conversion Technologies" as an element of an integrated solid waste management system. "Conversion Technology" (CT) is a general term to represent a waste management technology that processes municipal solid waste, or portions of the waste stream, into fuels, chemical products, energy sources, organic soil conditioners or other useful products. The technology may utilize thermal, chemical, mechanical or biological methods to process the municipal solid waste. For the purposes of this policy, SWANA has not included traditional waste to energy technologies, such as mass-burn and refuse derived fuel or organics processing technologies, such as conventional windrow or in-vessel composting, or anaerobic digestion in the definition of CTs because those technologies are considered in other technical policies.

CTs offer the potential of managing a portion of the waste stream for recovery of marketable materials or energy, however it is important to carefully evaluate the technology to determine if it will be able to successfully complement the local integrated solid waste management system.

Many of these technologies, while demonstrated to operate on select portions of the waste stream have not, for the most part, been successfully operated on a commercial scale on traditional municipal solid waste feedstock, for an extended period of time in North America. The lack of operating experience on a traditional solid waste feedstock creates an inherent risk to communities who are developing waste processing and disposal capabilities for their entire waste stream. Risks can include the following:

- that the regulatory agencies may not be familiar with the technology, leading to a lengthy permitting and approval process;
- that the technology may not process waste on a long- term and consistent basis;
- that the technology may not be able to process mixed municipal waste;
- that the environmental performance of the technology may not meet required standards;
- that the product(s) produced by the technology may not be marketable;
- that the technology may not be able to operate on the basis of the economic pro forma provided and
- that the company promoting the technology and/or operating the facility may not remain solvent and committed to the technology.

These risks and others may be present to varying degrees and may be able to be managed with appropriate planning.

It should be noted that SWANA supports various methods of waste prevention, reuse, recycling, processing, energy recovery and disposal as part of an integrated waste management system. SWANA has developed technical policies to provide assistance to our members in making decisions regarding the components of their systems. These include the following Technical Policies:

- Policy T 2- Solid Waste Reduction;
- Policy T 6- Recycling as Part of Integrated Solid Waste Management;
- Policy T 7-Composting as Part of Integrated Solid Waste Management;
- Policy T 8- Waste to Energy as part of Integrated Solid Waste Management;
- Policy T 9-Landfilling as Part of Integrated Solid Waste Management.

The use of a CT should be consistent with the USEPA Waste Management Hierarchy (http://www.epa.gov/wastes/nonhaz/municipal/hierarchy.htm), or similar requirements in other countries, and with the state/provincial and local government's integrated solid waste management plan including existing and planned waste prevention, reduction and recycling programs. CT facilities should be operated by a manager with certification by the American Society of Mechanical Engineering (ASME), or a similar accredited organization in other countries. Permitting of CT facilities, as with other waste management facilities, should be consistent with the established and long term capacity needs of local government and their integrated solid waste management plans. CT projects require significant upfront capital, and the economic feasibility of these projects should be reviewed by financial specialists. The full costs for the siting, design, construction and operation should be included in the costs assigned to a facility within an integrated solid waste management system, including residue management and disposal of waste that cannot be processed by the CT. Expected revenues from sales of electricity, steam/heat, fuels or other products, as well as potential revenues related to renewable energy credits and carbon credits should be considered as part of the full cost accounting. The selection of a CT, similar to other waste management options, should be consistent with best practices regarding engineering, economics, environmental and public health issues. The use of CTs should be based on the assurance that during siting, design, construction and operation, the facility will comply with all federal, state/provincial and local government rules, regulations and permits.

During the past five years there has been a significant increase, (particularly in Europe and Asia), in the number and type of technologies that have been proposed and/or constructed for management of a portion of the waste stream. Communities considering CTs as part of their integrated solid waste management system should pay particular attention to the commercial viability of the technology, and look for companies/technologies with a successful track record. A primary question should be, "Has this technology demonstrated the ability to consistently (without interruption, during a prescribed period of time, under the specific performance requirements of the community) operate on a waste feedstock (quality and quantity) consistent with the adopted solid waste management plan of the community and in an environmentally sound manner?"

Position/Recommendations

The following are considered to be best practices in the planning, siting, design and operation of CT facilities as a part of an integrated solid waste management system:

1. Planning for CT facilities should consider the following factors:
   - evaluation of need for the technology based on current and projected waste volumes and characteristics,
   - evaluation of compatibility with recycling, composting, waste-to-energy and source reduction efforts in the community's integrated solid waste plan,
   - evaluation of the risk posture of the community,
   - evaluation of the potential delivery process and business model (Design/Build, Design Build Operate, Design Build Own Operate, other methods)

The use of experienced consultants and attorneys for development of dependable feasibility, procurement and contract documents is recommended. Consideration of CTs should include the following evaluations and verifications prior to commitment to a technology: (a check list could also be provided):

a. Independent engineering evaluation of comprehensive Mass and Energy balance.
b. Site visit to operating facility(s) to verify viability of the technology.
c. Verification of operations, availability and capacity, on mixed municipal waste feed stock and/or on residuals remaining after other recycling, reuse and recovery activities (i.e. post diversion MSW residuals) for an extended, continuous period of time.
d. Identification of pre-processing and other feedstock requirements.
e. Verification of environmental performance.
f. Determination of scale-up requirements and restrictions. Verification of the quality and quantity of facility products (electrical production, fuel, recyclables etc.) and byproducts (residue)
g. Comments from local users, neighbors and regulators on the viability and compatibility of any reference facility-(ies).

2. Sites for CT facilities should be selected based on the following principles:

- consistency with local land use conditions and zoning codes,
- consideration of projected waste availability and energy demand for the immediate surrounding area to minimize transportation and transmission costs,
- siting in proximity to existing infrastructure such as roads, rail access, utilities, transmission lines, steam loops/customers, collection/transfer systems, material processing and recovery facilities, and residue reuse or disposal sites, and;
- consideration of, and adherence to environmental justice principles.

3. Facilities should be designed by registered professional engineers and other licensed professionals with clearly demonstrated knowledge in CT facility design, and shall be designed in accordance with the following principles:

- designed for long term operation at high availability levels,
- designed for environmental excellence in operations, including: use of energy efficient equipment, minimizing use of chemicals and water, maximizing reuse of resources within operations and zero discharge of wastewater,
- designed in a manner to maximize recovery of energy and other useable products
- designed with a means for the measurement of incoming solid waste and out-shipped residue, energy products and bi-products,
- designed with a means for the screening of incoming solid waste,
- designed to include or be a part of a system that includes household hazardous waste and electronic waste recovery programs when appropriate,
- designed to control run-on and run-off to minimize or prevent surface water contamination,
- designed with a means to minimize generation of and control emissions of green house gases and other air quality contaminants, to ensure compliance with applicable regulations,
- designed to incorporate continuous emissions monitoring systems,
- designed to support the beneficial use of residue,
- designed for maximum recovery of reusable materials from residue,
- designed to allow for the safe transport and disposal of unusable residue in permitted disposal areas, and;

- designed to allow observation of the facility and facilitate education of the public on the facility process.

4. Construction of CT facilities shall be conducted by licensed contractors familiar with industrial level energy generating or manufacturing facilities with appropriate construction management, monitoring and certification oversight.

5. CT facilities should be properly commissioned and tested to ensure achievement of performance guarantees.

6. Operation of CT facilities shall aspire to the following principles:

   - operated under the management of a provincial/state certified manager/operator in those provinces/states where certification is required,
   - operated by a manager with certification by ASME (or a similar organization in other countries)in the appropriate category of management and operation,
   - operated using an asset management program, as well as preventive and predictive maintenance programs performed to minimize outages and down time,
   - operated using real-time operational and emissions data to enable operation at the appropriate standards,
   - operated by providing training of all on-site personnel appropriate to their assigned area of responsibility,
   - operated with high standard safety programs (such as OSHA) focused on worker health and safety as well as the safety of customers and contractors at the facility,
   - operated with a provision for controlled access to the facility and use by only authorized users.

Several communities have developed a "Check List" of questions that are required to be answered before the waste professionals will entertain additional discussion of the proposed technology. A sample "Check List" can be provided upon request.

Approved by the International Board on April 14, 2014.

Richard Allen, International Secretary
Dated April 15, 2014
Editorial changes approved by the Policy Committee on
May 5, 2014