

Certain hospital wastes are regulated under Part 111, Hazardous Waste Management, Michigan Compiled Laws (MCL) 324.11101 *et seq.* (Part 111) of Michigan's Natural Resources and Environmental Protection Act; 1994 PA 451, as amended, and Subtitle C of the Resource Conservation and Recovery Act of 1976, as amended (RCRA), and any administrative rules or regulations promulgated pursuant to these acts.

Many hospitals may not be classifying their wastes appropriately to assure that solid and hazardous wastes are disposed of in compliance with state and federal regulations. This bulletin has been prepared to provide guidance to hospitals, with an emphasis on hospital pharmacies to correctly classify, containerize, label, and dispose of waste medicine.

The bulletin applies to hospitals which are regulated hazardous waste generators under RCRA and Part 111. Hospital facilities generating more than 100 kilograms of hazardous waste (or 1 kilogram of P-listed waste) per month are regulated. Hazardous waste from pharmacy departments normally represent a small fraction of the hazardous waste generated by hospitals. Xylene from the pathology lab, paint waste from maintenance, silver waste from the processing of x-rays, some x-ray films, fluorescent light bulbs\* and batteries\* are other potential hazardous waste streams generated by hospitals. If hazardous waste generated by the hospital as a whole is greater than 100 kilograms per month (this is equivalent to 220 pounds or to about the weight of 27 gallons of water), or if 1 kilogram of a P-listed waste is generated, any hazardous waste generated by the pharmacy will also be regulated. Although regulated hospitals are the focus of this bulletin, much of the guidance will be applicable to smaller hospitals as well.

The table (see attached) contains examples of elements and compounds that hospital pharmacies often generate and, when disposed of, may need to be handled as hazardous waste. Many of the compounds are medications and, if returned to the manufacturer, wholesaler or other reverse distributor, are not considered a waste to the hospital. USEPA and DEQ have recognized that a market mechanism is in place that provides for the return of medications (including those outdated, damaged in shipment, recalled, or which have FDA approval repealed) to the manufacturer or third party. The manufacturer or third party makes the decision on disposal of these medications, and the medications will not have to be declared as wastes to the hospital.

Compounds from the table with a P or U waste code would be a hazardous waste only if they are the sole active ingredient in the material being disposed. For example, if an IV dose of chlorambucil is prepared and not used and must be disposed of, this material must be disposed of as a hazardous waste. If two active ingredients are used in the medication, however, the material need not be classified as a hazardous waste. What often occurs is that some compounds that are hazardous waste when disposed of are being disposed of as medical waste. Medical waste transporters and disposal facilities may not be licensed to handle this waste. Those materials identified as hazardous waste are required to be containerized, labeled with the



words "hazardous waste," and the waste numbers, and marked with the date accumulation began. Disposal of the waste should normally occur within 180 days of the date accumulation began (90 days for hospitals which generate over 1000 kilograms of hazardous waste or one kilogram of P-listed waste per month).

The flow chart (see attached) is a waste classification aid for the hospital pharmacy. The first diamond illustrates the return of medications. In the second diamond are the list of U and P code wastes. The table (see attached) is a list of elements and compounds known to be used by hospitals but may not be complete. The third diamond, on the flow chart, requires an evaluation of whether the material exhibits a characteristic of hazardous waste. Characteristics of hazardous waste include ignitability, corrosivity, reactivity and toxicity as defined in Part 111. Many materials may contain alcohol and be ignitable. Materials containing zinc, lindane or barium may be toxic. Materials which are strongly acidic or basic may be corrosive. If the material is found to exhibit a characteristic of hazardous waste, the medication should be handled as a hazardous waste, and the waste code for that characteristic applies.

If the material is not a listed or a characteristic hazardous waste, the material should be disposed of in compliance with the following: Part 115, Solid Waste Management; Part 121, Liquid Industrial Wastes, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); and The Michigan Medical Waste Regulatory Act of 1990, Act 368, P.A. 1978, Part 138, Medical Waste.

\* Wastes such as fluorescent light bulbs and batteries may be managed as universal wastes - request a copy of the Waste Management Division Universal Waste Fact Sheet from either your local DEQ District Office or by calling the Environmental Assistance Division at 1-800-662-9278.

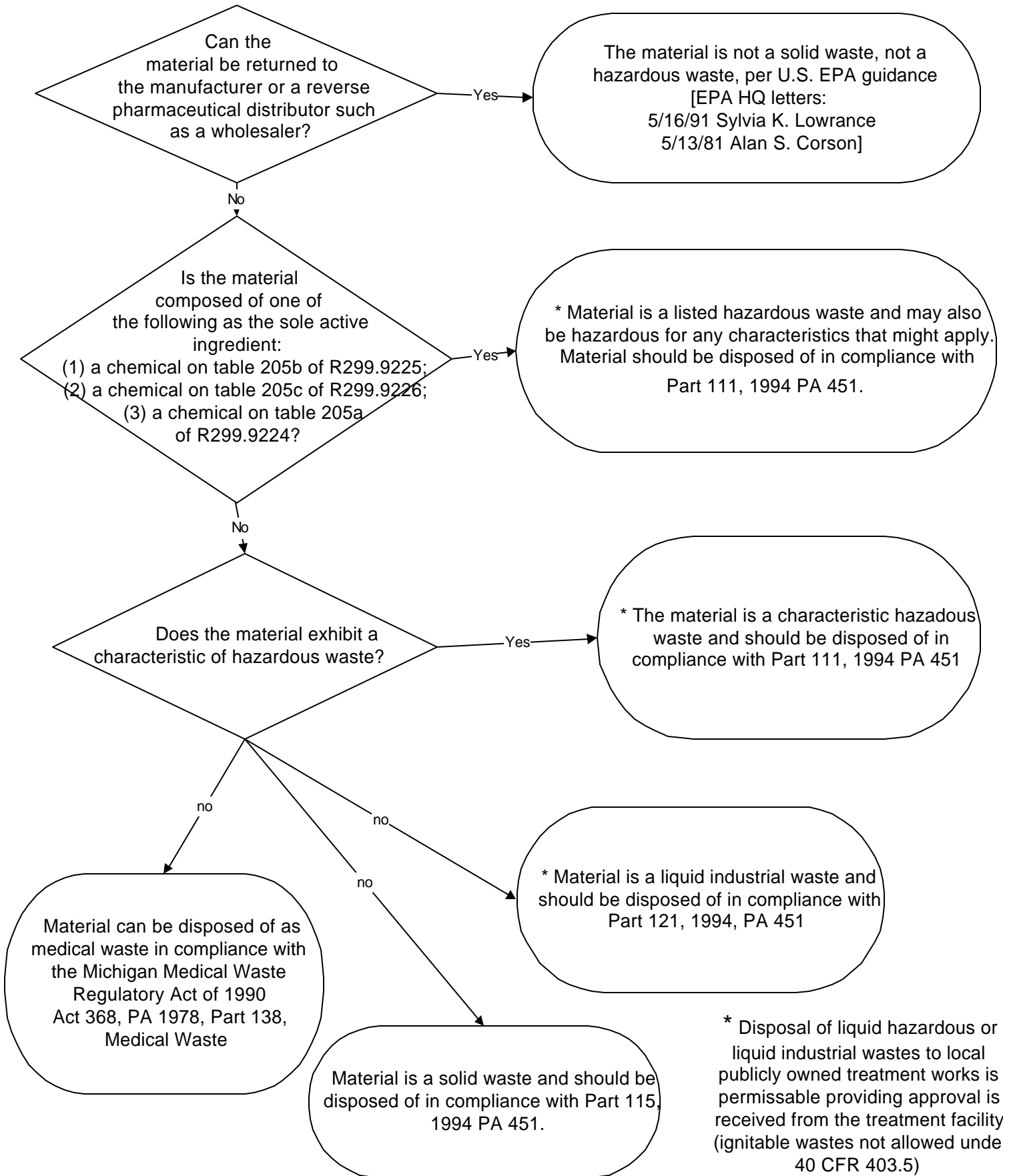
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# Flow chart for the evaluation of Waste Pharmaceuticals

Applicable to small quantity and fully regulated generators of hazardous waste



## Table

Examples of hazardous wastes that might be encountered by hospital pharmacies.  
(May not be complete)

D040	trichloroethylene
D013	lindane
D005	barium
P042	epinephrine
P081	nitroglycerine
P001	warfarin
U002	acetone
U035	chlorambucil (leukeran)
U059	daunomycin
U058	cyclophosphamide
U089	diethylstilbesterol
U129	lindane (repeat)
U132	hexachlorophene
U150	melphalan (alckeran)
U164	methylthiouracil
U010	mitomycin
U182	paraldehyde
U187	phenacetin
U188	phenol
U200	reserpine
U201	resorcinol
U202	saccharin
U206	streptozotocin
U237	uracil mustard
104U	nitrogen mustard
115U	phenobarbital
116U	phenytoin
117U	phenytoin sodium
127U	propylthiouracil
003D	zinc chloride
D007	chromium
D010	selenium
D011	silver