TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER EL PASO

Operating Policy and Procedure

HSCEP OP: 75.17, **Disposals of Medications**

PURPOSE: It is the policy of Texas Tech University Health Sciences Center El Paso (TTUHSC El Paso) to dispose of all expired, unwanted prescription-drug medications in a safe manner for the environment and protection of any person who might potentially come into contact with disposed medications.

REVIEW: This Operating Policy and Procedure (HSCEP OP) pertains to all staff employed by TTUHSC El Paso and all outlying clinics.

This HSCEP OP will be reviewed in March of every even numbered year by the Senior Director of Safety Services, with recommendations and revisions forwarded through the Managing Director of Facilities Support Services to the Chief Financial Officer.

PROCEDURE:

I. Any unwanted, expired medications of any type will need to be set aside and characterized into the following groups; Liquids and Solids. The expired substances will be disposed of through an approved waste hauler. Medication classified as hazardous will need to be disposed of through a hazardous chemical disposal hauler and controlled substance medication will be disposed of through an authorized controlled substance hauler. (See attached drug disposal poster for examples)

A. **Liquids-** includes, but not limited to, cough syrup, ointments, partial vials, vaccines, etc.

B. **Solids-** includes, but not limited to, pills, capsules without liquid contents, powders, etc.

C. **Hazardous-** includes, but not limited to, inhalants, aerosol cans, chemotherapy drugs, nitroglycerin products, epinephrine, warfarin, etc. This type of medication is processed by a chemical transfer disposal form, and will be treated as hazardous waste.

D. **Controlled Substance Medications-** includes, but not limited to, morphine, codeine, muscle relaxants, sedatives, to include scheduled I- V dangerous drugs.

II. Medication that is ready to be disposed of needs to remain in the department. The department needs to complete a prescription medication disposal form, available on the Safety Services webpage. The form can be found at http://www.ttuhsc.edu/admin/safety/forms/drugs.aspx. The Department of Safety Services will be prompted once the request form is submitted and will pick up the waste from the department. (See attached sample copy)

III. Off-site clinics must dispose using authorized waste hauler disposal boxes. Off-site clinics must arrange with Safety Services for pickups, and they need to complete the hazardous chemical transfer form for those products identified as chemicals and the controlled substance medication form for this type of waste. The forms can be located at this website: http://www.ttuhsc.edu/admin/safety/ . Off-site clinics do not need to complete the prescription drugs/medication disposal form.

IV. Clinics may request disposal kits from Safety Services. Safety Services will contact a third-party

vendor and request (Boomerang) disposal kits. The kits will be mailed directly to the requester. However, requestor will need to provide 1. Specific location (address), 2. DEA License Holder Name, 3. DEA License Number, 4. Name for Point of Contact, Each department will be responsible for the purchase of the kits. Once the kit is received the requestor will immediately follow the instructions provided in order to dispose of the dangerous drugs.

V. The medications will be disposed of appropriately and the department will be charged their portion of the disposal fee.

VI. Departments are to conduct a medication assessment to identify those medications that are classified as hazardous drugs and maintain an inventory list of these medications. (Attachment A). These typically include: cancer chemotherapy, antiviral drugs, hormones, some bioengineered drugs, and other miscellaneous drugs. The National Institute for Occupational Safety and Health (NIOSH) definition of drugs considered hazardous includes those that exhibit one or more characteristics in humans or animals:

- Carcinogenicity
- Teratogenicity or other developmental toxicity
- Reproductive toxicity
- Organ toxicity at low doses
- Genotoxicity
- Structure and/or toxicity profiles of new drugs that mimic existing drugs determined hazardous by the above criteria.

VII. **Attachment B**: is a listing of major hazardous drugs generated by the American Society of Health Pharmacists (ASHP) and the American Hospital Formulary Service (AHFS) Drug Information. Since the list is not all inclusive, departments should check the Safety Data Sheets (SDS) of each medication to evaluate the potential hazard of the drug and determine if it is hazardous or not.

VIII. Contact the Department of Safety Services if you have any questions or concerns.

Medication Inventory (Attachment A)

Item #	Product Name	Substance Name	Concentration	CAS #	Quantity	Unit	Hazard Class	Location	Date Received	Date Expired	Supplier	Identify if waste is hazardous? Yes	No
1													
2													
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Table 1. Antineoplastic drugs including those with manufacturers' safe handling guidance (MSHG)

Drug	AHFS classification	MSHG	Reason for listing	Links
abiraterone*	10:00 antineoplastic agents		Women who are pregnant or women who may be pregnant should not handle without protection (e.g., gloves); FDA Pregnancy Category X	DailyMed; DrugBank
ado-trastuzumab emtansine	10:00 antineoplastic agents	yes	Conjugated monoclonal antibody; FDA Pregnancy Category D	DailyMed; DrugBank
altretamine	10:00 antineoplastic agents	yes	FDA Pregnancy category D	DailyMed; DrugBank
amsacrine	NA antineoplastic agents	yes	IARC Group 2B	DrugBank
anastrozole	10:00 antineoplastic agents		FDA Pregnancy category X	DailyMed; DrugBank
arsenic trioxide	10:00 antineoplastic agents	yes	IARC Group 1 carcinogen**; FDA Pregnancy Category D	DailyMed; DrugBank
azacitidine	10:00 antineoplastic agents	yes	IARC Group 2A carcinogen; FDA Pregnancy Category D	DailyMed; DrugBank
bacillus calmette Guerin (BCG)***	80:12 vaccines	yes	See special handling requirements**; FDA Pregnancy Category C	DailyMed
bendamustine	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed;
bexarotene	10:00 antineoplastic agents		FDA Pregnancy Category X	DailyMed; DrugBank
bicalutimide	10:00 antineoplastic agents		FDA Pregnancy Category X	DailyMed; DrugBank
bleomycin	10:00 antineoplastic agents	yes	IARC Group 2B; FDA Pregnancy Category D	DailyMed; DrugBank
bortezomib	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
brentuximab vedotin	10:00 antineoplastic agents	yes	Conjugated monoclonal antibody; FDA Pregnancy Category D	DailyMed; DrugBank
busulfan	10:00 antineoplastic agents	yes	IARC Group 1 carcinogen; FDA Pregnancy Category D	DailyMed; DrugBank
cabazitaxel	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
capecitabine	10:00 antineoplastic agents	yes	Metabolized to 5-fluoro-uracil; FDA Pregnancy Category D	DailyMed; DrugBank
carboplatin	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
carmustine	10:00 antineoplastic agents	yes	IARC Group 2A carcinogen; FDA Pregnancy Category D	DailyMed; DrugBank
chlorambucil	10:00 antineoplastic agents	yes	IARC Group 1 carcinogen; FDA Pregnancy Category D	DailyMed; DrugBank
cisplatin	10:00 antineoplastic agents	yes	IARC Group 2A carcinogen; FDA Pregnancy Category D	DailyMed; DrugBank
cladribine	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
clofarabine	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
crizotinib	10:00 antineoplastic agents		FDA Pregnancy Category D	DailyMed
cyclophosphamide	10:00 antineoplastic agents	yes	IARC Group 1 carcinogen; FDA Pregnancy Category D	DailyMed; Drugbank
cytarabine	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank

Table 1 (Continued). Antineoplastic drugs including those with manufacturers' safe handling guidance (MSHG)

Drug	AHFS classification	MSHG	Reason for listing	Links
dacarbazine	10:00 antineoplastic agents	yes	FDA Pregnancy Category C	DailyMed; Drugbank
dactinomycin	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
dasatinib	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; Drugbank
daunorubicin	10:00 antineoplastic agents	yes	IARC Group 2B, AKA dauno-mycin; FDA Pregnancy Cat-egory D	DailyMed; Drugbank
decitabine	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; Drugbank
degarelix	10:00 antineoplastic agents	yes	FDA Pregnancy Category X	DailyMed; Drugbank
docetaxel	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
doxorubicin	10:00 antineoplastic agents	yes	IARC Group 2A carcinogen; FDA Pregnancy Category D	DailyMed; DrugBank
epirubicin	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; Drugbank
eribulin	10:00 antineoplastic agents		FDA Pregnancy Category D	DailyMed; DrugBank
erlotinib	10:00 antineoplastic agents		FDA Pregnancy Category D	DailyMed; DrugBank
estramustine	10:00 antineoplastic agents	yes	FDA Pregnancy Category X	DailyMed; Drugbank
etoposide	10:00 antineoplastic agents	yes	IARC Group 1 carcinogen; FDA Pregnancy Category D	DailyMed; DrugBank
everolimus	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; Drugbank
exemestane	10:00 antineoplastic agents		FDA Pregnancy Category X	DailyMed; DrugBank
floxuridine	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
fludarabine	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
fluorouracil	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
flutamide	10:00 antineoplastic agents		Indicated only for men; FDA Pregnancy Category D	DailyMed; DrugBank
fulvestrant	10:00 antineoplastic agents		FDA Pregnancy Category D	DailyMed; DrugBank
gemcitabine	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
gemtuzumab ozogamicin	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank

Table 1 (Continued). Antineoplastic drugs including those with manufacturers' safe handling guidance (MSHG)

Drug	AHFS classification	MSHG	Reason for listing	Links
goserelin	10:00 antineoplastic agents		FDA Pregnancy Category X	DailyMed; Drugbank
hydroxyurea	10:00 antineoplastic agents	yes	Special warning on handling bottles and capsules FDA Pregnancy Category D	DailyMed; DrugBank
idarubicin	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
ifosfamide	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
imatinib	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
irinotecan	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
ixabepilone	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
letrozole	10:00 antineoplastic agents		FDA pregnancy Category X	DailyMed; DrugBank
leuprolide	10:00 antineoplastic agents	yes	FDA Pregnancy Category X	DailyMed; Drugbank
lomustine	10:00 antineoplastic agents	yes	IARC Group 2A carcinogen; FDA Pregnancy Category D	DailyMed; DrugBank
mechloreth-amine	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
megestrol	10:00 antineoplastic agents		Nursing should be dis-continued if megestrol is required. Women at risk of pregnancy should avoid exposure; FDA Pregnancy Category X	DailyMed; DrugBank
melphalan	10:00 antineoplastic agents	yes	IARC Group 1 carcinogen; FDA Pregnancy Category D	DailyMed; DrugBank
mercaptopurine	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
methotrexate	10:00 antineoplastic agents	yes	FDA Pregnancy Category X	DailyMed; DrugBank
mitomycin	10:00 antineoplastic agents	yes	IARC Group 2B; FDA Preg-nancy Category D	DailyMed; DrugBank
mitotane	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
mitoxantrone	10:00 antineoplastic agents	yes	IARC Group 2B; FDA Preg-nancy Category D	DailyMed; DrugBank
nelarabine	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank

Table 1 (Continued). Antineoplastic drugs including those with manufacturers' safe handling guidance (MSHG)

Drug	AHFS classification	MSHG	Reason for listing	Links
nilotinib	10:00 antineoplastic agents		FDA Pregnancy Category D	DailyMed; DrugBank
omacetaxin	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
oxaliplatin	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
paclitaxel	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
pazopanib	10:00 antineoplastic agents		FDA Pregnancy Category D	DailyMed; DrugBank
pemetrexed	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
pentostatin	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
pralatrexate	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
procarbazine	10:00 antineoplastic agents	yes	IARC Group 2A carcinogen; FDA Pregnancy Category D	DailyMed; DrugBank
romidepsin	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed
sorafenib	10:00 antineoplastic agents		FDA Pregnancy Category D	DailyMed; DrugBank
streptozocin	10:00 antineoplastic agents	yes	IARC Group 2B; FDA Pregnancy Category D	DailyMed; DrugBank
sunitinib	10:00 antineoplastic agents		FDA Pregnancy Category D	DailyMed; DrugBank
tamoxifen	10:00 antineoplastic agents		IARC Group 1 carcinogen; FDA Pregnancy Category D	DailyMed; DrugBank
temozolomide	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
temsirolimus	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
teniposide	10:00 antineoplastic agents	yes	IARC Group 2A carcinogen; FDA Pregnancy Category D	DailyMed; DrugBank
thioguanine	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
thiotepa	10:00 antineoplastic agents	yes	IARC Group 1 carcinogen; FDA Pregnancy Category D	DailyMed; DrugBank
topotecan	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
toremifene	10:00 antineoplastic agents		FDA Pregnancy Category D	DailyMed; DrugBank
trimetrexate	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
triptorelin	10:00 antineoplastic agents		FDA Pregnancy Category X	DailyMed

Table 1 (Continued). Antineoplastic drugs including those with manufacturers' safe handling guidance (MSHG)

Drug	AHFS classification	MSHG	Reason for listing	Links
valrubicin	10:00 antineoplastic agents	yes	FDA Pregnancy Category C	DailyMed; DrugBank
vandetanib	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
vemurafenib	10:00 antineoplastic agents		FDA Pregnancy Category D	DailyMed; DrugBank
vinblastine	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
vincristine	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; Drugbank
vinorelbine	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; DrugBank
vorinostat	10:00 antineoplastic agents	yes	FDA Pregnancy Category D	DailyMed; Drugbank

The drugs in Table 2 meet one or more of the NIOSH criteria for a hazardous drug. Unopened, intact tablets and capsules may not pose the same degree of occupational exposure risk as injectable drugs, which usually require extensive preparation. Cutting, crushing, or otherwise manipulating tablets and capsules will increase the risk of exposure to workers. Some of these drugs may represent an occupational hazard to males or females who are actively trying to conceive, women who are pregnant or may become pregnant, or women who are breast feeding, because they may be present in breast milk. Manufacturers' safe-handling guidance (MSHG) is typically in Section 16 of the drug package insert. See Table 5 for safe-handling recommendations. AHFS = American Hospital Formulary Service; MHRD = maximum recommended human dose.

*Drugs in red font were added in 2014.

**International Agency for Research on Cancer, www.iarc.fr

***Drugs in blue font meet one or more additional criteria for a hazardous drug and also pose a potential reproductive hazard.

Table 2. Non-antineoplastic drugs that meet one or more of the NIOSH criteria for a hazardous drug including those with manufacturers' safe handling guidance (MSHG)

Drug	AHFS classification	MSHG	Reason for listing	Links
abacavir*	8:18.08.20 nucleoside and reverse transcriptase inhibitors		FDA Pregnancy Category C; malignant tumors observed in male and female mice and rats; genotoxic in *in vivo* micronucleus test.	DailyMed; DrugBank
alefacept	84:92 skin and mucous membrane agents, miscellaneous		Increased frequency of malignancies observed in treated patients; FDA Pregnancy Category B	DailyMed; DrugBank
apomorphine	28:36.20.08 Nonergot-derivative dopamine receptor agonists		FDA Pregnancy Category C; genotoxic in several *in vitro* assays.	DailyMed; DrugBank
azathioprine	92:44 immunosuppressant agents	yes	IARC Group 1 carcinogen**; FDA Pregnancy Category D***	DailyMed; DrugBank
carbamazepine	28:12:92 anticonvulsants, miscellaneous		Black Box warning for aplastic anemia; congenital malformations in offspring of mothers who took drug; rapid transplacental passage; FDA Pregnancy Category D	DailyMed; Drugbank

Table 2 (Continued). Non-antineoplastic drugs that meet one or more of the NIOSH criteria for a hazardous drug including those with manufacturers' safe handling guidance (MSHG)

Drug	AHFS classification
[redacted]	

Table 3 (Continued). Non-antineoplastic drugs that primarily have adverse reproductive effects*

Drug	AHFS classification	Reason for listing	Links
testosterone	68:08 androgens	Children should avoid contact with unwashed or unclothed application sites on skin; FDA Pregnancy Category X	DailyMed; DrugBank
topiramate	28:12.92 anticonvulsants, miscellaneous	FDA Pregnancy Category D	DailyMed; DrugBank
tretinoin	84:16 cell stimulants and proliferants	Black Box warning for severe birth defects; Special FDA distribution system; FDA Pregnancy Category X	DailyMed; DrugBank
ulipristal	68:12 contraceptives	FDA Pregnancy Category X	DailyMed
valproate/valproic acid	28:12:92 anticonvulsants, miscellaneous	Black Box warning for teratogenicity; congenital malformations including neural tube defects and others; teratogenic in multiple species; FDA Pregnancy Category D	DailyMed; DailyMed; DrugBank
vigabatrin	28:12:92 anticonvulsants, miscellaneous	Malformations seen in laboratory studies below the MRHD; FDA Pregnancy Category C	DailyMed; Drugbank
voriconazole	8:14.08 azoles	FDA Pregnancy Category D	DailyMed; DrugBank
warfarin	20:12.04.08 coumarin derivatives	FDA Pregnancy Category D	DailyMed; DrugBank
ziprasidone	28:16:08:04 atypical antipsychotics	Developmental toxicity, including possible teratogenic effects at doses similar to human therapeutic doses; an increase in the number of pups born dead and a decrease in postnatal survival at less than MRHD; FDA Pregnancy Category C	DailyMed; Drugbank

Table 3 (Continued). Non-antineoplastic drugs that primarily have adverse reproductive effects*

Drug	AHFS classification	Reason for listing	Links
zoledronic acid	92:24 bone resorption inhibitors	Number of stillbirths increased and survival of neonates decreased in laboratory studies at low doses; FDA Pregnancy Category D	DailyMed; DrugBank
zonisamide	28:12:92 anticonvulsants, miscellaneous	Teratogenic in multiple animal species; FDA Pregnancy Category C	DailyMed; DrugBank

Table 4 lists drugs that were deleted from the 2004 and 2012 NIOSH hazardous drug lists. The 2004 list was a composite of five separate lists. When the drugs on that list were reviewed against the NIOSH criteria for hazardous drugs, these 11 drugs did not meet the criteria. Tetracycline was removed from the 2012 list on the basis of feedback from stakeholders.

*AHFS = American Hospital Formulary Service.

Table 4a. Drugs deleted from the 2004 hazardous drug list for not meeting the NIOSH criteria for hazardous drugs

Drug	AHFS Classification*
aldesleukin	10:00 antineoplastic agents
asparaginase	10:00 antineoplastic agents
denileukin	10:00 antineoplastic agents
estrone	68:16.04 estrogens
nilutamide	10:00 antineoplastic agents
pegaspargase	10:00 antineoplastic agents
pentamidine isethionate	8:40 miscellaneous anti-infectives
podofilox/podophyllum resin	84:36 miscellaneous skin and mucous membrane agents (mitotic inhibitor)
testolactone	10:00 antineoplastic agents
trifluridine	52:04.06 antivirals
vidarabine	52:04.06 antivirals

Table 4b. Drugs deleted from the 2012 list on the basis of stakeholder comments

Drug	AHFS Classification*
Tetracycline	8:12.24 tetracyclines