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APPENDICES

APPENDIX A

Questionnaires For Hospital Waste Composition Survey

Survey questionnaire for hospital waste management

QUESTIONNAIRE

Hospital (name, location):

No. Of inpatients: _____ /day

No. Of outpatients: _____ /day

No. Of beds (total): _____ /day

Including _____ in _____ ward
(No.) (Type of ward)

_____ In _____ ward
(No.) (Type of ward)

_____ In _____ ward
(No.) (Type of ward)

_____ In _____ ward
(No.) (Type of ward)

_____ In _____ ward
(No.) (Type of ward)

_____ In _____ ward
(No.) (Type of ward)

_____ In _____ ward
(No.) (Type of ward)

_____ In _____ ward
(No.) (Type of ward)

_____ In _____ ward
(No.) (Type of ward)

_____ In _____ ward
(No.) (Type of ward)

Survey questionnaire for hospital waste management (continued)

Type of solid waste produced and estimated quantity
 (Consult classification and mark X where waste is produced)

Sources	Waste Category							Est. quantity Kg/day	
	General	Pathological	Radioactive	Chemical	Infectious	Sharps	Pharmaceutical		Pressurized Containers
<i>Patient services</i> Medical Surgical Operating theatre Recovery/intensive care Isolation ward Dialysis unit Oncology unit Emergency Outpatient clinic Autopsy room Radiology									
<i>Laboratories</i> Biochemistry Microbiology Hematology Research Pathology Nuclear medicine									
<i>Support services</i> Blood bank Pharmacy Central sterile supply Laundry Kitchen Engineering Administration Public areas Long-term health care									

Survey questionnaire for hospital waste management (continued)**Waste Segregation, Collection, storage, and handling**

Describe briefly what happens between segregation (if any) and final disposal of:

Sharps

Pathological waste

Infectious waste

Radioactive waste

Chemical waste

Pharmaceutical waste

Pressurized containers

Survey questionnaire for hospital waste management (continued)

Waste segregation, collection, labeling, transport, and disposal

Handling of segregated waste	Sharps	Pathological waste	Infectious Waste	Radioactive waste	Chemical waste	Pharmaceutical waste	Pressurized containers
Indicated by X the type of waste (if any) that is segregated from general waste stream							
Where is the segregation-taking place (i.e. operating room, laboratory, etc)?							
What type of containers/bags (primary containment vessels are used to segregate waste (bags, cardboard boxes, plastic containers, metal containers, etc.)? Describe accurately							
What type of labeling, color-coding (if any) is used for marking segregated waste? Describe.							
1. Who handles (removes) the segregated waste (designation of the hospital staff member)? 2. Is the waste handler using any protective clothing (gloves, etc.)? During waste handling? Y/N							
What type of containers (plastic bins, bag, cardboard boxes, trolleys, wheelbarrow, etc.) Are used for collection and internal transport of the waste? Describe							
Where is the segregated waste stored while awaiting removal from the hospital or disposal							
Describe briefly the final disposal of segregated waste (taken to municipal landfill, buried on hospital ground, incinerated, open burned, etc.)							

Survey questionnaire for hospital waste management *(continued)*

Personnel involved in the management of hospital solid waste

1. (a) Designation of person(s) responsible for organization and management of waste collection, handling, storage, and disposal at the hospital administration level.

- (b) General qualification and level of education of designated person.

- (c) Has he/she received any training on hospital waste management?

Yes No

If yes, what type of training and of what duration?

2. Indicate the number of person involved in the collection, handling and storage of hospital waste, their designation, their training in solid waste handling and management, and the number of years of experience of this type of work.

Number	Designation	Training	Experience

3. Do the waste management staff have job description detailing their tasks?

Yes No

4. Are instructions/training given to newly hired waste management staff

Yes No

Hospital waste management policy

1. Are you aware of any legislation application to hospital waste management?

Yes No

If yes, please list the legislative acts:

2. Are you aware of a document outlining the hospital waste management policy?

Yes No

If yes, give title of document (and attach a copy if possible):

3. Is there a manual or guideline document on management of hospital waste available:

(a) In the Ministry of Health?

Yes No

If yes, give title of document:

(b) In your hospital?

Yes No

If yes, give title document:

4. (a) Does your hospital have a Waste Management Plan?

Yes No

If yes, please attach the copy

(b) Does your hospital have a Waste Management Team (or Teams)?

Yes No

If yes, please list the members by designation

	Designation	No.
Team leader	_____	_____
Team members:	_____	_____
Waste handling staff	_____	_____

5. Are there clearly defined procedures for collection and handling of waste from specified units in the hospital?

Yes No

6. Are there waste management responsibilities included in the job descriptions of hospital supervisory staff (Head of hospital, Department Heads, Matron/Senior Nursing Officer, Hospital Engineer, Infectious Control Office, Pharmacist, Laboratory Supervisor, etc.)?

Yes No

7. How are the present waste collection, handling, and disposal responsibilities defined in the job? Description of the staff involved?
(Cite appropriate statement or provide copies.)



APPENDIX B

Questionnaires for Hazardous Waste Management Survey

APPENDIX C

Results of Hospital Waste Composition Survey in Twelve Hospitals

TABLE C-1 Type And Amount Of Overall Hospital Waste Stream; Survey Of 12-Hospitals In Chiang Mai City

ITEM	Daily generation (Kilograms/day)															Average	% By weigh
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
Organic waste	1750	2000	2500	1780	2970	1530	1400	1750	1680	1700	2800	2040	1960	1740	1920	1969.3	52.9
Plastic (bottle and bag)	420	390	470	320	480	330	350	400	270	320	400	420	400	330	350	376.7	10.1
Metal, can	95	150	190	120	152	123	48	65	70	64	170	156	107	56	101	111.1	2.9
Glass and medicine tube	72	86	116	70	146	92	53	58	62	55	98	106	95	66	100	85	2.3
Syringes and syringe needles	34	38	41	16	45	36	20	37	34	25	45	42	38	36	38	35	0.9
Paper, carton, cardboard	36	34	36	26	43	36	22	260	34	165	42	37	33	19.2	29	31.3	0.8
Bandage, plaster, gauze	284	350	392	22	420	296	201	350	345	308	400	400	300	326	290	325.5	8.8
Human part for lab analysis	21	18.6	31	16.5	30	15.7	17.8	23.5	20.3	18.6	2.9	19.5	17.7	19.7	12	20.7	0.6
Other solid waste	640	830	830	790	1000	75	600	740	760	480	950	900	790	790	700	770	20.9
Total	3352	3896.6	4606	3358.5	5286	3228.7	2711.8	3449.5	3275.3	2987.1	4934	4120.5	3740.7	3382.9	3540	3724.6	100.00

TABLE C-2 Solid Waste Composition In Hospital Waste Stream; Survey Of 12-Hospitals In Chiang Mai City

Waste Category	Daily generation (Kilograms/day)															Average	% By weight
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
Paper	130.3	184.0	165.0	151.7	172.3	189.3	191.0	171.0	112.0	157.0	140.0	120.0	103.3	171.0	136.0	152.9	48.5
Food waste and other organics	54.3	82.7	70.3	62.3	76.0	80.7	87.7	66.0	43.3	64.0	63.7	47.3	41.7	68.3	61.7	64.7	20.5
Plastic	32.7	52.0	38.3	43.3	56.7	53.3	47.7	45.0	33.3	40.0	42.0	26.7	30.0	46.7	34.3	41.5	13.1
Household hazardous waste	2.5	4.6	6.8	5.7	5.0	3.2	6.1	4.8	4.0	7.8	5.5	2.9	2.4	5.1	4.5	4.7	1.5
Metals	2.8	5.5	6.9	4.5	8.3	5.2	7.2	5.9	4.0	6.8	3.6	4.5	4.1	8.0	3.2	5.4	1.7
Glass	3.2	5.7	5.0	4.0	5.6	4.2	5.2	4.2	2.1	4.5	3.4	2.0	2.9	6.1	3.5	4.1	1.3
Yard trimming	4.1	9.5	13.0	11.5	12.2	6.4	12.2	9.7	8.0	14.0	11.5	5.9	4.7	10.3	9.0	9.5	3.0
Other	17.1	31.2	40.1	27.3	51.0	34.2	45.2	35.9	25.2	40.8	22.8	26.7	25.7	49.5	19.4	32.8	10.4
Total	247.0	375.1	345.5	310.4	387.1	376.4	402.2	342.4	232.0	334.9	292.5	236.0	214.7	365.0	271.6	315.5	100.0

TABLE C-3 Number Of Occupied Beds And Out Patients In Surveyed Hospital

Group	Hospitals	Status	Bed size	Average occupied bed	Occupancy rate	Out patient	Total patient
1 <100 beds	A	Public hospital	60	56	0.93	280	326
	B	Private hospital	45	15	0.33	160	175
	C	Private hospital	60	27	0.45	193	220
	D	Private hospital	60	23	0.38	225	248
	E	Private hospital	80	33	0.41	250	283
2 100-299 Beds	F	Public hospital	150	139	0.93	470	609
	G	Private hospital	150	55	0.37	337	392
	H	Private hospital	250	87	0.35	380	467
3 300-499 Beds	I	Public hospital	350	318	0.91	785	1103
	J	Private hospital	350	135	0.39	492	627
4 >500 Beds	K	Public hospital	600	575	0.96	1650	2225
	L	Private hospital	500	206	0.41	760	973

Table C-4 Result Of Generation And Composition (Classified By Physical Characteristic) Of Hospital Waste Survey At Hospital A.

Day	Occupied bed	Out patient	Total patient	Total waste	Medical waste	Domestic waste	Recyclable material
1	42	295	337	148.1	87.4	45.8	4.8
2	41	330	371	143.3	84.6	27.1	5.3
3	39	277	316	115.5	84.2	26.2	5.1
4	37	322	359	108.9	79.3	24.7	4.8
5	44	272	316	128.8	93.8	29.2	5.7
6	43	298	351	126.1	91.9	28.6	5.6
7	42	263	305	124.8	90.9	18.0	5.5
8	44	274	318	130.1	94.8	25.1	5.7
9	42	250	272	123.5	90.0	28.0	5.4
10	44	274	318	130.1	94.8	29.5	5.7
11	41	252	293	119.5	87.1	27.1	5.3
12	42	244	286	124.8	91.0	28.3	5.5
13	44	272	316	128.8	94.2	29.2	5.7
14	39	290	329	114.2	86.4	22.5	5.0
Average	42	280	322	126	89	28	5
Kg/occupied bed/day				2.95	2.15	0.67	0.13
Kg/patient/day				0.391	0.276	0.087	0.019

Table C-5 Result Of Generation And Composition (Classified By Physical Characteristic) Of Hospital Waste Survey At Hospital B.

Day	Occupied bed	Out patient	Total patient	Total waste	Medical waste	Domestic waste	Recyclable material
1	17	149	166	57.8	42.0	22.2	10.1
2	36	211	247	123.8	90.0	47.52	21.6
3	23	139	162	78.4	57.0	30.096	13.7
4	27	232	259	92.9	67.5	35.64	16.2
5	22	218	240	76.4	55.5	29.304	13.3
6	12	176	188	41.3	30.0	15.84	7.2
7	12	150	162	41.3	30.0	15.84	7.2
8	18	208	226	61.9	45.0	23.76	10.8
9	36	120	156	123.8	90.0	47.52	21.6
10	6	157	163	20.6	15.0	7.92	3.6
11	12	144	156	41.3	30.0	15.84	7.2
12	18	120	138	61.9	45.0	23.76	10.8
13	12	240	252	41.3	30.0	15.84	7.2
14	30	93	123	103.2	75.0	39.6	18.0
Average	20	168	188	69	50	26	12
Kg/occupied bed/day				3.44	2.51	1.32	0.60
Kg/patient/day				0.367	0.266	0.138	0.064

Table C-6 Result Of Generation And Composition (Classified By Physical Characteristic) Of Hospital Waste Survey At Hospital C.

Day	Occupied bed	Out patient	Total patient	Total waste	Medical waste	Domestic waste	Recyclable material
1	17	179	196	77.4	36.1	27.7	5.9
2	36	255	291	166.0	77.4	59.4	12.6
3	23	168	191	105.1	49.0	37.6	8.0
4	42	234	276	193.6	90.3	69.3	14.7
5	22	260	282	102.3	47.7	36.6	7.8
6	18	210	228	83.0	38.7	29.7	6.3
7	12	181	193	55.3	25.8	19.8	4.2
8	30	251	281	138.3	64.5	49.5	10.5
9	36	145	181	166.0	77.4	59.4	12.6
10	30	189	219	138.3	64.5	49.5	10.5
11	18	174	192	83.0	38.7	29.7	6.3
12	18	135	153	83.0	38.7	29.7	6.3
13	18	240	258	83.0	38.7	29.7	6.3
14	42	146	188	193.6	90.3	69.3	14.7
Average	26	198	224	119	56	43	9
Kg/occupied bed/day				4.61	2.15	1.65	0.35
Kg/patient/day				0.531	0.25	0.192	0.040

Table C-7 Result Of Generation And Composition (Classified By Physical Characteristic) Of Hospital Waste Survey At Hospital D.

Day	Occupied bed	Out patient	Total patient	Total waste	Medical waste	Domestic waste	Recyclable material
1	17	209	315	61.3	41.7	15.3	4.5
2	18	297	219	65.7	44.6	16.4	4.9
3	23	196	346	83.2	56.5	20.7	6.2
4	36	310	262	131.4	89.3	32.8	9.7
5	22	240	266	81.0	55.1	20.2	6.0
6	18	248	224	65.7	44.6	16.4	4.9
7	12	212	317	43.8	29.8	10.9	3.2
8	24	293	205	87.6	59.5	21.8	6.5
9	36	169	242	131.4	89.3	32.8	9.7
10	24	218	221	87.6	59.5	21.8	6.5
11	18	203	184	65.7	44.6	16.4	4.9
12	18	166	268	65.7	44.6	16.4	4.9
13	12	256	173	43.8	29.8	10.9	3.2
14	42	131	248	153.3	104.2	38.2	11.3
Average	23	225	315	83.4	56.7	20.8	6.2
Kg/occupied bed/day				3.65	2.48	0.91	0.27
Kg/patient/day				0.336	0.229	0.173	0.084

Table C-8 Result Of Generation And Composition (Classified By Physical Characteristic) Of Hospital Waste Survey At Hospital E.

Day	Occupied bed	Out patient	Total patient	Total waste	Medical waste	Domestic waste	Recyclable material
1	17	233	250	70.6	38.1	17.6	22.7
2	18	290	308	75.6	40.9	18.9	24.3
3	23	205	228	95.8	51.8	23.9	30.8
4	18	363	381	75.6	40.9	18.9	24.3
5	30	340	370	126.0	68.1	31.5	40.5
6	18	247	265	75.6	40.9	18.9	24.3
7	30	235	265	126.0	68.1	31.5	40.5
8	24	302	326	100.8	54.5	25.2	32.4
9	36	188	224	151.2	81.7	37.8	48.6
10	24	245	269	100.8	54.5	25.2	32.4
11	18	225	243	75.6	40.9	18.9	24.3
12	18	188	206	75.6	40.9	18.9	24.3
13	30	360	390	126.0	68.1	31.5	40.5
14	42	145	187	176.4	95.3	44.1	56.7
Average	25	255	280	104	56	26	33
Kg/occupied bed/day				4.20	2.27	1.05	1.35
Kg/patient/day				0.371	0.200	0.093	0.118

Table C-9 Result Of Generation And Composition (Classified By Physical Characteristic) Of Hospital Waste Survey At Hospital F.

Day	Occupied bed	Out patient	Total patient	Total waste	Medical waste	Domestic waste	Recyclable material
1	150	437	587	432.0	333.0	87.0	12.0
2	150	620	770	432.0	333.0	87.0	12.0
3	135	358	453	388.8	299.7	78.3	10.8
4	150	605	750	432.0	333.0	87.0	12.0
5	135	620	755	388.8	299.7	78.3	10.8
6	120	517	637	345.6	266.4	69.6	9.6
7	135	442	577	388.8	299.7	78.3	10.8
8	150	611	761	432.0	333.0	87.0	12.0
9	147	353	520	423.4	326.3	85.3	11.8
10	135	461	596	388.8	299.7	78.3	10.8
11	150	473	573	432.0	333.0	87.0	12.0
12	105	353	458	302.4	233.1	60.9	8.4
13	150	508	658	432.0	333.0	87.0	12.0
14	150	273	423	432.0	333.0	87.0	12.0
Average	140	470	610	404	311.1	81	11
Kg/occupied bed/day				2.88	2.22	0.58	0.08
Kg/patient/day				0.662	0.510	0.133	0.018

Table C-10 Result of generation and composition (classified by physical characteristic) of hospital waste survey at hospital G.

Day	Occupied Bed	Out Patient	Total waste	Total Waste	Medical Waste	Domestic Waste	Recyclable Material
1	60	313	373	271.2	156.0	81.6	26.4
2	75	445	520	339.0	195.0	102.0	33.0
3	30	293	323	135.6	78.0	40.8	13.2
4	45	489	534	203.4	117.0	61.2	19.8
5	105	438	543	474.6	273.0	142.8	46.2
6	30	371	401	135.6	78.0	40.8	13.2
7	90	317	407	406.8	234.0	122.4	39.6
8	60	438	498	271.2	156.0	81.6	26.4
9	45	245	290	203.4	117.0	61.2	19.8
10	75	219	294	339.0	195.0	102.0	33.0
11	30	303	333	135.6	78.0	40.8	13.2
12	45	253	298	203.4	117.0	61.2	19.8
13	60	404	464	271.2	156.0	81.6	26.4
14	30	193	223	135.6	78.0	40.8	13.2
Average	56	337	393	252	145	76	25
Kg/occupied bed/day				4.52	2.60	1.36	0.44
Kg/patient/day				0.641	0.369	0.193	0.064

Table C-11 Result Of Generation And Composition (Classified By Physical Characteristic) Of Hospital Waste Survey At Hospital H.

Day	Occupied bed	Out patient	Total Waste	Total waste	Medical waste	Domestic waste	Recyclable material
1	75	353	428	382.5	171.0	126.0	93.8
2	125	502	627	637.5	285.0	210.0	156.3
3	50	331	381	255.0	114.0	84.0	62.5
4	75	551	626	382.5	171.0	126.0	93.8
5	125	494	619	637.5	285.0	210.0	156.3
6	50	418	468	255.0	114.0	84.0	62.5
7	125	357	482	637.5	285.0	210.0	156.3
8	100	494	594	510.0	228.0	168.0	125.0
9	75	285	360	382.5	171.0	126.0	93.8
10	125	247	372	637.5	285.0	210.0	156.3
11	50	342	392	255.0	114.0	84.0	62.5
12	75	285	360	382.5	171.0	126.0	93.8
13	100	445	545	510.0	228.0	168.0	125.0
14	50	220	270	255.0	114.0	84.0	62.5
Average	86	380	466	437	195	144	107
Kg/occupied bed/day				5.10	2.28	1.68	1.25
Kg/patient/day				0.938	0.418	0.309	0.230

Table C-12 Result Of Generation And Composition (Classified By Physical Characteristic) Of Hospital Waste Survey At Hospital I.

Day	Occupied Bed	Out Patient	Total patient	Total Waste	Medical Waste	Domestic Waste	Recyclable Material
1	326	730	1029	962.5	576.0	427.0	96.0
2	321	1036	1357	875.0	611.0	486.0	61.0
3	295	683	978	752.0	646.0	470.4	73.0
4	330	1138	1468	995.0	485.0	560.0	55.0
5	297	1021	1318	823.0	638.4	415.0	63.0
6	275	864	1139	962.5	624.0	470.0	77.5
7	305	738	1043	866.3	583.0	575.0	67.0
8	267	1021	1288	768.0	619.0	425.0	82.0
9	341	589	930	971.0	653.0	322.0	98.5
10	349	510	859	956.0	647.0	588.0	103.5
11	342	707	1049	765.0	660.0	470.4	73.0
12	336	589	925	835.0	790.0	529.2	92.0
13	330	942	1272	820.0	605.0	540.0	76.0
14	335	455	790	865.0	525.0	411.0	88.0
Average	318	787	1105	873	619	478	79
Kg/occupied bed/day				2.75	1.95	1.50	0.25
Kg/patient/day				0.790	0.560	0.433	0.071

Table C-13 Result Of Generation And Composition (Classified By Physical Characteristic) Of Hospital Waste Survey At Hospital J.

Day	Occupied bed	Out patient	Total patient	Total waste	Medical waste	Domestic waste	Recyclable material
1	158	458	616	781.2	409.5	258.3	113.4
2	112	649	761	555.5	291.2	183.7	80.6
3	130	428	558	642.3	336.7	212.4	93.2
4	189	713	902	937.4	491.4	310.0	136.1
5	123	669	792	607.6	318.5	200.9	88.2
6	98	541	639	486.1	254.8	160.7	70.6
7	112	462	574	553.0	291.2	183.7	80.6
8	123	640	763	607.6	318.5	200.9	88.2
9	158	369	527	781.2	409.5	258.3	113.4
10	179	482	661	885.4	464.1	292.7	128.5
11	147	443	590	729.1	382.2	241.1	105.8
12	126	369	495	625.0	327.6	206.6	90.7
13	116	738	854	572.9	300.3	189.4	83.2
14	123	285	408	607.6	318.5	200.9	88.2
Average	135	518	653	669	351.0	221	97
Kg/occupied bed/day				4.96	2.60	1.64	0.72
Kg/patient/day				1.025	0.538	0.338	0.149

**Table C-15 Result Of Generation And Composition (Classified By Physical Characteristic)
Of Hospital Waste Survey At Hospital K**

Day	Occupied bed	Out patient	Total patient	Total waste	Medical waste	Domestic waste	Recyclable material
1	550	1535	2085	1309.0	1083.5	198.0	27.5
2	563	2178	2741	1339.9	1109.1	202.7	35.4
3	570	1436	2006	1356.6	1122.9	205.2	28.5
4	588	1980	2568	1399.4	1158.4	211.7	29.4
5	592	2244	2836	1409.0	1166.2	213.1	35.0
6	590	1815	2405	1404.2	1162.3	212.4	29.5
7	585	1551	2136	1392.3	1152.5	210.6	33.5
8	571	1870	2441	1359.0	1124.9	205.6	23.0
9	569	1238	1807	1354.2	1120.9	204.8	28.5
10	586	1617	2203	1394.7	1154.4	211.0	29.3
11	572	1485	2057	1361.4	1126.8	205.9	28.6
12	564	1238	1802	1342.3	1111.1	203.0	26.0
13	570	1955	2525	1356.6	1122.9	205.2	36.0
14	576	957	1533	1370.9	1134.7	207.4	25.5
Average	575	1650	2225	1368	1132	207	30
Kg/occupied bed/day				2.38	1.97	0.36	0.05
Kg/patient/day				0.615	0.508	0.093	0.013

Table C-16 Result Of Generation And Composition (Classified By Physical Characteristic) Of Hospital Waste Survey At Hospital L.

Day	Occupied bed	Out patient	Total patient	Total waste	Medical waste	Domestic waste	Recyclable material
1	225	707	932	1113.8	533.3	299.3	281.3
2	150	1003	1153	742.5	355.5	199.5	187.5
3	175	661	836	866.3	414.8	232.8	218.8
4	261	1102	1363	1292.0	618.6	347.1	326.3
5	220	1034	1254	1089.0	521.4	292.6	275.0
6	205	836	1041	1014.8	485.9	272.7	256.3
7	225	714	939	1113.8	533.3	299.3	281.3
8	185	988	1173	915.8	438.5	246.1	231.3
9	160	570	730	792.0	379.2	212.8	200.0
10	265	745	1010	1311.8	628.1	352.5	331.3
11	240	684	924	1188.0	568.8	319.2	300.0
12	225	570	795	1113.8	533.3	299.3	281.3
13	200	1140	1340	990.0	474.0	266.0	250.0
14	242	441	683	1197.9	573.5	321.9	302.5
Average	213	800	1013	1053	504	283	266
Kg/occupied bed/day				4.95	2.37	1.33	1.25
Kg/patient/day				1.039	0.498	0.279	0.262

APPENDIX D

Results of Hazardous Waste Management Survey in Two Hospitals

Table D-1 Generation of Chemotherapy Waste at Pharmacy and Patient Care Ward of Hospital A and Hospital B

Day	Pharmacy		Patient care ward	
	Hospital A	Hospital B	Hospital A	Hospital B
1	10.30	11.09	274	252
2	15.40	6.95	176	162
3	6.45	16.58	203	187
4	12.36	10.32	312	287
5	8.25	13.31	254	234
6	9.58	8.88	265	244
7	8.59	9.25	278	256
8	7.14	7.69	168	155
9	19.87	21.40	312	287
10	7.26	7.82	256	236
11	11.12	11.98	264	243
12	5.12	5.51	230	212
13	14.20	15.29	201	185
14	9.96	10.73	307	282
Average	10.4	11.2	250	230

UNIT= CUBIC METER

Table D-2 Results Of Chemotherapy waste Survey (Sources and quantity) In Hospital A and Hospital B

Week	Pharmacy		Patient care ward		Special clinic		Other	
	Hospital A	Hospital B	Hospital A	Hospital B	Hospital A	Hospital B	Hospital A	Hospital B
1	5.35	5.35	1.20	1.20	0.59	0.59	0.73	0.73
2	15.23	15.23	3.40	3.40	1.68	1.68	2.08	2.08
3	9.32	9.32	2.08	2.08	1.03	1.03	1.27	1.27
4	12.25	12.25	2.74	2.74	1.35	1.35	1.67	1.67
5	10.90	10.90	2.43	2.43	1.20	1.20	1.49	1.49
Average	10.61	13.36	2.37	2.92	1.17	3.17	1.45	1.87

UNIT= CUBIC METER

Table D- 3 Generation Of Radioactive Waste In Hospital A and Hospital B

Week	Generation of radioactive waste (cm ³ /week)		Number of examined patient in week	
	Hospital A	Hospital B	Hospital A	Hospital B
1	78	165	230	493
2	90	120	221	354
3	71	154	220	384
4	77	134	214	562
5	84	152	276	457
Average	80	145	232	450

Table D-4 Generation Of Photographic Waste In Hospital A and Hospital B

DAY	Hospital A				Hospital B			
	Average waste generation		Daily average of examined patient		Average waste generation		Daily average of examined patient	
	Fixer	Developer	Fixer	Developer	Fixer	Developer	Fixer	Developer
1	5.12	6.11	50	69	15.20	29.01	75	95
2	6.24	4.10	63	46	10.21	19.47	79	80
3	8.02	4.79	48	54	13.12	22.74	83	82
4	6.95	4.57	46	52	11.37	21.69	94	78
5	9.27	3.37	59	48	15.17	16.00	86	73
6	11.78	7.74	53	68	15.27	36.76	72	83
7	6.25	4.11	45	46	10.23	19.51	79	91
8	7.36	4.84	68	55	12.04	22.97	103	83
9	9.29	6.09	72	59	8.38	28.91	94	90
10	6.84	4.50	46	51	11.19	21.35	91	77
11	9.12	6.00	68	68	14.92	28.46	77	103
12	5.69	3.74	42	52	13.31	17.76	89	79
13	6.21	4.08	67	56	10.16	19.38	72	85
14	7.28	5.27	57	60	11.91	25.02	96	90
Average	7.53	4.95	56	56	12.32	23.5	85	85

BIOGRAPHY

Miss Nonthaporn Buddharaksa was born on 23rd October, 1979 in Bangkok. She finished her higher secondary course from Chiang Mai University Demonstration School, Chiang Mai in March 1997. After that, she studied in the department of Environmental Engineering in Faculty of Engineer at Chiang Mai University. She continued her further study for Master's degree in International Environmental Management Science at Chulalongkorn University and achieved her Master's degree in April, 2003.

