Acknowledgements

We would firstly like to thank Hector Lupin from the Fishery Industries Division at the Food and Agricultural Organisation, for his continued support throughout the project. The technical Manual 351 was used extensively as a reference source and blueprint for much of the work.

We'd also like to thank Ib Kollavik-Jensen for his constant enthusiasm and support for the economic approach to improved control.

Our appreciation also goes to Dr John Ryder from the National Resources Institute International, now with Eastfish of Denmark, who commissioned this work, for his enthusiasm and input in the early stages.

Our thanks also goes to Mr E. Spencer Garret, Director of the National Seafood Inspection Laboratory USA , for providing the American approach and economic data.

Finally, we would like to thank Vance McEachern and John Emberley, from the Government of Canada, Department of Fisheries and Oceans, for commissioning parallel studies from 1995-1999 which enabled some methods to be refined and tested.

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Project Overview

The main objective of the project was to produce appropriate and replicable methodologies for identifying the magnitude and source of post-harvest losses in coastal fisheries.

The purpose of the project was to develop the local capacity to adapt and implement cost effective control measures targeted at the critical loss areas within a defined fisheries chain.
The understanding and practical development of methods utilisation of the predictive costing software will enable the policy makers to promote effective strategies to control loss and maintain quality. Commercial decision-makers, local advisors and fishing communities will also benefit through cost analysis of their relevant control options.

The software and associated methodologies will assist in the future planning of cost-effective control systems within Uganda and Ghana thus benefiting fisherfolk, processors, exporters and purchasers of fish products

This Manual is one of several outputs associated with the DFID Post Harvest Fisheries Research Programme's Fish Loss Assessment and Control (FLAC) initiative. Other FLAC tools are Costing Control Methods. FishLoss (Database of loss information), Predictive Model (Assessing the impact of intervention), Trials Database (Assessing the impact of quality intervention), Ice Calculator and Sanitation Control (monitoring factory-based quality control) computer software

Disclaimer

This document is an output from the Post Harvest Fisheries Research programme of the UK Department for International Development (DFID) for the benefit of developing countries. The views expressed are not necessarily those of DFID.

CD Contents

When the CD enclosed within this pack is placed into your computer you will see an introductory menu. From here you have the option to:

- ✓ Review the Features of the Software
- ✓ View Software Demonstrations
- ✓ Run Worked Examples
- ✓ Run Programs from CD
- ✓ View Videos of the Programs
- ✓ Install Programs to a Hard Disk
- ✓ View Contacts

DFID Projects: R5027 R7008, R6817
Natural Resources Institute

- ✓ Fish Loss Assessment and Control Project Outputs

Using the CD

After selecting the Cleanse-IT, Ice-IT and Log-IT option from the initial menu, the next screen you will see is shown below:

The different sections of the CD become available by clicking on the buttons down the left side.
(features, demos, software install, contact, exit)

The name of the current section is shown at the bottom Left of the Screen
(Main Menu in this example)

To have a look at some information about the main features of each of the programs, press the “features” button on the left.

You will then see the screen below:

Press one of the three buttons to see information about that program.

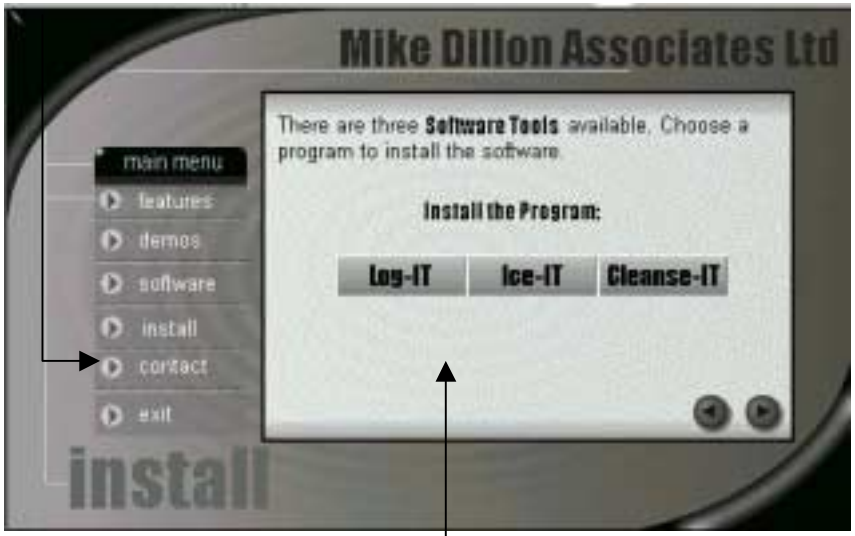
To see more about what the software can do, press the “demos” button and choose a program.

Installation Instructions

To install Log-IT, Cleanse-IT or Ice-IT to your computer you can use the CD provided. If for any reason you are unable to use the CD, please contact Mike Dillon Associates Ltd. for a set of floppy disks.

Installing from the CD:

First choose the Install option from the left side of the screen.



Then choose the program you want to install to your hard drive.

Follow the instructions for installing from floppy disks from step 8.

Installing from Floppy Disks:

1. ***If Applicable*** Switch on computer (WIN 95 will automatically load) ELSE load windows 3.11.from the MSDos prompt by typing "**WIN**" the "**Enter**"(**c:>WIN**)
2. Windows for Workgroups or Windows 3.11 - From the *Program Manager* Select **File** from Menu (**ALT+F**)
   Win 95/98 or NT4.0 - Select **START** button, button left of screen
3. Select **Run** (or press R) from the drop down box
4. A window will open with the Title *Run* (The Title Bar - Usually
5. Place **Disk 1** in Drive A:.
6. You will now be asked for a command line, within this window. (Text may already exist)
   Type **a: set-up** (not case sensitive)
7. Press **Enter** or single click on **OK**
8. The Set up window will appear. Please Wait.
9. Screen changes to Blue/Black, Set-up in top Left Hand corner
10. Select **OK** Button with mouse or press **Enter**.
11. The next screen will ask for the directory for files to be stored in. Press **Enter** or Select **OK** button with the mouse.
12. Do not change this directory unless
    1. The default directory conflicts with the current system
    2. The software is to be placed on drive other than C:
13. The next screen will allow you to Exit Set-up or Change Directory. Use the mouse to select the *Picture of the Computer* or Press **ALT+C** to begin Installation.
14. You will then be asked to Choose Program Group. Use the already highlighted Program Group name and Select **Continue** with the mouse or Press **ALT+C**.
15. Please Wait for Screen Prompts to ask you to remove and place each disk in drive a in the order the system requests.
16. When complete select **OK** button with mouse or Press **Enter**.
17. The program is now ready to run. To begin select the Icon in the chosen program group by Double Clicking with the mouse.

Software Support and Registration

For further help and support with using the Log-IT, Ice-IT and Cleanse-IT software, please contact:

Mike Dillon Associates Ltd.

32a Hainton Avenue

Grimsby,

N.E. Lincolnshire

DN32 9BB

United Kingdom.

Tel: +44 (0)1472 348852 (2 Lines)

Fax: +44 (0)1472 356838

email: software@mdassoc.demon.co.uk

To register your software, please fill in the Registration Form and return it to address above.

Any data entered into the software should be backed up by attaching the data set to an email and sending it to the above email address.

Software Registration Form

Name	
Position	
Company	
Address	
Tel.	
Fax	
Email	

Which software do you want to register?

Log-IT ☐

Cleanse-IT ☐

Ice-IT ☐

Comments

Please attach your business card if possible.

Software Registration Form

Name	
Position	
Company	
Address	
Tel.	
Fax	
Email	

Which software do you want to register?

Log-IT ☐

Cleanse-IT ☐

Ice-IT ☐

Comments

Please attach your business card if possible.

Software Registration Form

Name	
Position	
Company	
Address	
Tel.	
Fax	
Email	

Which software do you want to register?

Log-IT ☐

Cleanse-IT ☐

Ice-IT ☐

Comments

Please attach your business card if possible.

Review: CLEANSE IT – Cleaning Methods

We are grateful for your assistance in this evaluation, please use this form & indicate the most appropriate number against each category. We would also welcome any additional comments you wish to make:

a) **Installation and Set up**
You are given guidance into set up – can you follow and install?

Not Possible/Errors	1	2	3	4	5	6	7	Very Easy, No Problems
Additional Comments:								

b) **Support from the Workshop Activities and User Manual**
Can you see what the software does from the manual?

Confusing, Insufficient information	1	2	3	4	5	6	7	Clear with sufficient information
Additional Comments:								

c) **Ease of use**
How easy is it to perform the calculations using the software?

Very Difficult	1	2	3	4	5	6	7	Simple and Clear
Additional Comments:								

d) **Relevance to your country**
Is this software tool useful to you?

Little/No relevance	1	2	3	4	5	6	7	Highly relevant
Additional Comments:								

e) **Report layouts/content**
Are they what you need, can you understand the content?

Not Possible/Errors	1	2	3	4	5	6	7	Very Easy, No Problems
Additional Comments:								

Review: CLEANSE IT – Cost Predictions

We are grateful for your assistance in this evaluation, please use this form & indicate the most appropriate number against each category. We would also welcome any additional comments you wish to make:

a) **Installation and Set up**
You are given guidance into set up – can you follow and install?

Not Possible/Errors	1	2	3	4	5	6	7	Very Easy, No Problems
Additional Comments:								

b) **Support from the Workshop Activities and User Manual**
Can you see what the software does from the manual?

Confusing, Insufficient information	1	2	3	4	5	6	7	Clear with sufficient information
Additional Comments:								

c) **Ease of use**
How easy is it to perform the calculations using the software?

Very Difficult	1	2	3	4	5	6	7	Simple and Clear
Additional Comments:								

d) **Relevance to your country**
Is this software tool useful to you?

Little/No relevance	1	2	3	4	5	6	7	Highly relevant
Additional Comments:								

e) **Report layouts/content**
Are they what you need, can you understand the content?

Not Possible/Errors	1	2	3	4	5	6	7	Very Easy, No Problems
Additional Comments:								

Review: ICE IT – Ice melting Rate Trials

We are grateful for your assistance in this evaluation, please use this form & indicate the most appropriate number against each category. We would also welcome any additional comments you wish to make:

a) **Installation and Set up**
You are given guidance into set up – can you follow and install?

Not Possible/Errors	1	2	3	4	5	6	7	Very Easy, No Problems
Additional Comments:								

b) **Support from the Workshop Activities and User Manual**
Can you see what the software does from the manual?

Confusing, Insufficient information	1	2	3	4	5	6	7	Clear with sufficient information
Additional Comments:								

c) **Ease of use**
How easy is it to perform the calculations using the software?

Very Difficult	1	2	3	4	5	6	7	Simple and Clear
Additional Comments:								

d) **Relevance to your country**
Is this software tool useful to you?

Little/No relevance	1	2	3	4	5	6	7	Highly relevant
Additional Comments:								

e) **Report layouts/content**
Are they what you need, can you understand the content?

Not Possible/Errors	1	2	3	4	5	6	7	Very Easy, No Problems
Additional Comments:								

Review: ICE IT –Ice Trials

We are grateful for your assistance in this evaluation, please use this form & indicate the most appropriate number against each category. We would also welcome any additional comments you wish to make:

a) **Installation and Set up**
You are given guidance into set up – can you follow and install?

Not Possible/Errors	1	2	3	4	5	6	7	Very Easy, No Problems
Additional Comments:								

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Can you see what the software does from the manual?

Confusing, Insufficient information	1	2	3	4	5	6	7	Clear with sufficient information
Additional Comments:								

c) **Ease of use**
How easy is it to perform the calculations using the software?

Very Difficult	1	2	3	4	5	6	7	Simple and Clear
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Is this software tool useful to you?

Little/No relevance	1	2	3	4	5	6	7	Highly relevant
Additional Comments:								

e) **Report layouts/content**
Are they what you need, can you understand the content?

Not Possible/Errors	1	2	3	4	5	6	7	Very Easy, No Problems
Additional Comments:								

Review: ICE IT - Calculator

We are grateful for your assistance in this evaluation, please use this form & indicate the most appropriate number against each category. We would also welcome any additional comments you wish to make:

a) **Installation and Set up**
You are given guidance into set up – can you follow and install?

Not Possible/Errors	1	2	3	4	5	6	7	Very Easy, No Problems
Additional Comments:								

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Can you see what the software does from the manual?

Confusing, Insufficient information	1	2	3	4	5	6	7	Clear with sufficient information
Additional Comments:								

c) **Ease of use**
How easy is it to perform the calculations using the software?

Very Difficult	1	2	3	4	5	6	7	Simple and Clear
Additional Comments:								

d) **Relevance to your country**
Is this software tool useful to you?

Little/No relevance	1	2	3	4	5	6	7	Highly relevant
Additional Comments:								

e) **Report layouts/content**
Are they what you need, can you understand the content?

Not Possible/Errors	1	2	3	4	5	6	7	Very Easy, No Problems
Additional Comments:								

Review: LOG IT

We are grateful for your assistance in this evaluation, please use this form & indicate the most appropriate number against each category. We would also welcome any additional comments you wish to make:

a) **Installation and Set up**
You are given guidance into set up – can you follow and install?

Not Possible/Errors	1	2	3	4	5	6	7	Very Easy, No Problems
Additional Comments:								

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Can you see what the software does from the manual?

Confusing, Insufficient information	1	2	3	4	5	6	7	Clear with sufficient information
Additional Comments:								

c) **Ease of use**
How easy is it to perform the calculations using the software?

Very Difficult	1	2	3	4	5	6	7	Simple and Clear
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Is this software tool useful to you?

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e) **Report layouts/content**
Are they what you need, can you understand the content?

Not Possible/Errors	1	2	3	4	5	6	7	Very Easy, No Problems
Additional Comments:								

Terms of Reference

Read user manuals and make suggestions, if necessary, as to how it could be improved in terms of layout and user friendliness. At the same time highlight what other information, if any, the manual should contain.

Input a sample of data (See Workshop Activities). Comment on the strengths and weaknesses of the data entry facility. Please use the Screen number references, to enable an accurate means of identifying a link between computer and notes.

Outline other issues that should be addressed in both the software and manual which are not covered in 1. or 2.

Forms are provided for your comments and feedback
Please return on Completion

Workshop Activities Checklist

General

Activity	Description	Time Scale	Done
0.1	Register Software for Support	5 mins	

Cleanse- IT

Activity	Description	Time Scale	Done
1.1	View the Software being used (video)	5-10 mins	
1.2	View examples of cleaning methods used in Uganda	5-10 mins	
1.3	Practice Setting up and Entering Cleaning Methods	15-20 mins	
1.4	Complete Cleanse-IT Cleaning Methods Review Sheet.	5 mins	
2.1	Examples of how cost predictions are entered and Calculated (video)	5-10 mins	
2.2	View examples of cost predictions made in Uganda	5-10 mins	
2.3	Practice Data entry for Cost predictions	15-20 mins	
2.4	Practice Data entry for Cost predictions	5-10 mins	
2.5	Complete Cleanse-IT Cost Predictions Review Sheet.	5 mins	

2.6	Discuss in your group your opinions of Cleanse-IT.	5-10 mins	

Ice-IT

Activity	Description	Time Scale	Done
3.1	View the Software being used (video)	5-10 mins	
3.2	See examples of Melting trials performed in Uganda/Morocco	10-15 mins	
3.3	Entering Ice Melting Trials Data	10-15 mins	
3.4	Complete the Ice-IT Melting Trials Review Sheet	5 mins	
4.1	See an example of how Icing trials are entered (video)	5-10 mins	
4.2	See examples of Icing Trials performed in Uganda/Ghana.	10-15 mins	
4.3	Entering Ice Trials Data	10–15 mins	
4.4	Complete the Ice-IT Icing Trials Review Sheet.	5 mins	
5.1	Entering Data using Ice Calculator	5-10 mins	
5.2	Complete the Ice-IT Ice Calculator Review Sheet	5 mins	
5.3	Discuss in your group your opinions of Ice-IT	5-10 mins	

Log-IT

Activity	Description	Time Scale	Done
6.1	Example of how factory data is entered (video)	5-10 mins	
6.2	Entering Log IT data	10-15 mins	
6.3	Complete the Log-IT Review Sheet	5 mins	
6.4	Discuss in your group your opinions of Log-IT	5-10 mins	

Workshop Activities

1. Cleaning Methods (Cleanse-IT)

1.1 Theoretical – Computer based activity

- From the CD, press the Software button (left-hand side of screen)
- Now press the Cleanse-IT button and select Cleaning Methods from the options and press OK.
- Next select the Theoretical option and press ok.
- After a short delay, you will see a video of the software being used.
- Use the control panel to pause, stop and fast forward the video. When the video has finished, press the X in the top right corner to close the control panel.

1.2 Practical – Computer based activity

- From the CD, press the Software button (left-hand side of screen).
- Now press the Cleanse-IT button and select Cleaning Methods from the options and press OK.
- Next select the Practical option and press ok.
- After a short delay, Cleanse-IT is loaded with data from Uganda. First, information about the Programs and Data's location is displayed, Press OK. There is no need to update the calculations, select "No"
- You can view the Cleaning Methods via a Report. Select "Cleaning Methods Unit Costs" to close the report click on "File", then "Close".
- Press the Global Settings button (spanner), and then the Cleaning Methods button you can now see some real data.
- Select any Data Level / Cleaning Method, Examine the methods, resources, validation etc. as shown in the video from Activity 1.1.
- To exit from Cleanse-IT, press the door button on the Main Menu.

1.3 User Example – Computer based activity

- From the CD, press the Software button (left-hand side of screen)
- Now press the Cleanse-IT button and select Cleaning Methods from the options and press OK.
- Next select the Blank Data set option and press ok.

- After a short delay, Cleanse-IT is loaded with an empty data set. First, information about the Programs and Data's location is displayed, press OK. There is no need to update the calculations, select "No"
- Press the Global Settings button (spanner), You are now ready to start setting up and entering data for a new data set.

Step 1 - Units of Measurement

Throughout the program, references are made to resources, areas and key items. Before starting to build a cleaning methods list these must be defined. Later they can be added to and amended as required.

As we are starting a new data set, no information will exist.

The Units of Measurement are already declared. Select the buttons, "Production Frequency, " Declare Std Units" and "Conversion Factors" to see these settings, if required they can be changed now.

Select "Declare Std Units", modify Currency to = $

Step 2 - Companies, Areas and Key Items

Defining Companies, Areas and Key Items. These can be identified first then entered or built up as and when data entry requires them.

Company Name:	Unique ID:	BigCo
	Name:	Big Company

Select "Areas", The order is incremented in 10's to allow easy insertion of an additional area, if necessary.

Factory Areas	10	Reception
	20	Processing
	30	Packing
	40	Crate Washing

Return to the Global Settings Menu, Select "Key Items in Factory". Here we will enter just a couple of Key Items, remembering they can be added to at any time. The Units of Measurement relate to the "Standard Units" defined earlier. Different examples are given below. The Unique Key can sometimes be similar to the description

Key Items

Wall01	Terrazzo Wall	Area
Wall02	Plastic Coated Walls	Area

Floor	Floor	Area
Drain	Drains (In Floor)	Length
T100	100 Litre S.Steel Tubs	Units
T200	200 Litre S.Steel Tubs	Units
T500	500 Litre S.Steel Tubs	Units
PC20	20 Litre Plastic Crate	Units
PC50	50 Litre Plastic Tubs	Units
Ftab01	Filleting Table Frame	Units
FB01	Plastic Filleting Board	Area

Note that Tubs / Filleting Tables can be measured in two ways, in units (Only for Similar Key Items) or by Volume which would assume a 200L tub uses twice as much resources than a 100 Litre Tub, or a 2 Sq.M table uses four times as a ½ Sq M table.

Step 3 - Resources

Identify the Common Resources, Water, Labour and Chemicals. There is no need to declare chemical dilution at this stage.

Water: The most common sources of water have been entered, select "Water" and view the options. These can be amended

Modify the Description of "Supplied Water" to read "Municipal Water"

Enter a Cost of $1.48 per Cubic Metre. Ignore all other water types as these will not be used in this example.

Labour:	Lab01	Labour Rate 1	$300 per 40 Hr
	Lab02	Labour Rate 2	$12 per Hr

If the payment of labour is in units other than Hours or Minutes, such a Monthly, then the hourly cost will need to be calculated, or the number of hours working in that month estimated. The above example shows a weekly wage being entered, as a 40 Hr Week

Chemicals require more information to allow the calculation of dilutions and unit cost of a diluted chemical. As some chemicals are based on "Active Ingredients" such as ppm of Chlorine. The original strength of the chemical will require defining. For Example

10 Litres diluted to 100 Litres = 10% Dilution, whilst a ppm chlorine solution requires more investigation.

100g in 40 Litres = 100ppm solution we can work backwards to calculate the original ppm of the undiluted chemical,

We assume 40 Litres = 40,000 g(s), Giving a 1 in 400 dilution, as this gives 100ppm the original strength of the chemical would be 100ppm * 400 = 40,000 ppm Chemicals:

LS	Liquid Soap	%	100%	$14 per 5 Litre
CaOH	Calcium Hypochlorite	ppm	40,000ppm	$40 per 10 Kg

The resources required for the example have now been declared. Return to the Global Settings menu

Step 4 - Sanitation Details

The Cleaning Equipment is for reference only and does not form part of the equation for unit costing. Enter the suggested equipment below.

Cleaning Equipment	Bowl	3 Litre Plastic Bowl
	Bucket	5 Litre Plastic Bucket
	PH	Power Hose
	SB	Short Handled Brush
	LB	Long Handled Brush
	Scrub	Scrubbing Brush

The Chemical dilution can now be declared as the chemicals and related details have previously been entered in Step 3.

Declare the following dilutions

Liquid Soap (Looked up value from “Chemicals”) - 5%, 15% 100%

Calcium Hypochlorite - 10ppm, 50ppm 100ppm, 40,000ppm (undiluted)

Note that ppm calculation are recalculated as a % of the original strength to allow financial calculation to work out the unit costs per dilution

All the common details required to enter cleaning methods have been declared. We are ready to enter the Cleaning Methods.

Press the Cleaning Methods button, and then choose Key Item and press OK.

Select the “Add” button to create a new Cleaning Method

Cleaning Method:

Reference Code:	Wall01
Enter Resources Required:	Yes
Key Item:	Terrazzo Wall

Description of Cleaning Method:

1. Scrub wall with brush to remove debris
2. Rinse
2. Apply Detergent and Wash
3. Rinse
4. Apply Sanitiser

Note that no mention of specific chemical quantities or names have been refered to, these are specified in the resources section.

Method Applied to: 50 Sq Metres

Only Area measurments will be seen as the Key Item -Terrazzo Wall has been declared as an “Area” based measurement.

Resources Used

Water	Municipal Water		50 Litres
Labour	Labour Rate 1	2 persons	15 Mins
	Labour Rate 2	1 persons	2 Mins
Chemicals	10% Liquid Soap		15 Litres
	100ppm Calcium Hypochlorite		5 Litres
Cleaning Equipment	25 Litre Plastic Bucket		
	2 Scrubbing Brush		

Verification / Validation Method / Classification of Resources

For the purpose of this exercise, these can be ignored, but in reality they are important references to demonstrate that the cleaning method works and how the data has been verified, and to allow idenification of similar cleaning methods and resource.

Step 5 - Calculate the Costs

On leaving the “Cleaning Method” data entry screen, the costs are not calculated until the calculation is requested. This is due to the time required for calculating. To activate the calculation routine, return to the main menu.

On reaching of the Main Menu, you will be asked if you wish to recalculate - Press the YES button, then wait.

The total cost should be $35.77 which is approx $0.70 per Metre

To exit from Cleanse-IT, press the door button on the Main Menu.

1.4 Review – Paper based activity

- Complete the Cleanse-IT Cleaning Methods review sheet.

2. Cost Predictions (Cleanse-IT)

2.1 Theoretical – Computer based activity

- From the CD, press the Software button (left-hand side of screen)
- Now press the Cleanse-IT button and select Cost Predictions from the options and press OK.
- Next select the Theoretical option and press ok.
- After a short delay, you will see a video of the software being used.
- Use the control panel to pause, stop and fast forward the video. When the video has finished, press the X in the top right corner to close the control panel.

2.2 Practical Example – Computer based activity

- From the CD, press the Software button (left-hand side of screen)
- Now press the Cleanse-IT button and select Cost Predictions from the options and press OK.
- Next select the Practical option and press ok. First, information about the Programs and Data's location is displayed, press OK. There is no need to update the calculations, Select "No".
- After a short delay, Cleanse-IT is loaded with data from Uganda.
- Press the Costs and Predictions per Co. button, you can now see some real data.
- To exit from Cleanse-IT, press the door button on the Main Menu.

2.3 User Example – Computer based activity

- From the CD, press the Software button (left-hand side of screen).
- Now press the Cleanse-IT button and select Cost Predictions from the options and press OK.
- Next select the Blank Data Set options and press ok.
- After a short delay, Cleanse-IT is loaded with an empty data set. First, information about the Programs and Data's location is displayed, press OK. There is no need to update the calculations, select "No".

- Press the Global Settings button (spanner), you can now enter the required set up data to enable the cost predictions to be examined. The data collection protocols and methodology are contained in the Field manual (under development Sept 2000)

Step 1 – Define Currency and Company

Using the Global Settings,

Select "Declare Std Units" and change Currency to Ug.Sh

Select "Companies" enter "An Example Company"

Step 2 – Define Key Items

Key Items

ID	Description	How Measured
Env	Environment	Area
Equip	Equipment	Units

The assumption here is that all the cleaning methods will be matched with like equipment. For example if two cleaning methods exist for a Filleting Table, it is assumed they are of similar construction and size.

Alternately size can be the factor, but for this example units will be used.

We are now ready to enter the Cleaning Methods

Step 3 – Define Cleaning Methods

To save time, we will assume the costs of the following cleaning methods have been calculated or derived as per the previous activity.

The quick way to enter the cleaning Methods is by not having to define the resources required. Enter the following three methods for cleaning a wall. The difference of cost can be due to several reasons: Different chemicals, different equipment (powered, manual), levels of staff training. Normally this would be documented but we will assume this has been entered.

Press the Cleaning Methods button. All these Methods are "Key Items"

Select the "Add" button to create a new Cleaning method

Reference Code:	Wall01
Enter Resources Required	No
Key Item:	Environment

Desc of Cleaning Method:	Optional
Method Applied to:	50 Sq Metres
Cost	6000 Ug.Sh
Reference Code:	Wall02
Enter Resources Required	No
Key Item:	Environment
Desc of Cleaning Method:	Optional
Method Applied to:	100 Sq Metres
Cost	2500 Ug.Sh
Reference Code:	Wall03
Enter Resources Required	No
Key Item:	Environment
Desc of Cleaning Method:	Optional
Method Applied to:	50 Sq Metres
Cost	4000 Ug.Sh

Method Wall01, could be a standard cleaning procedure, whilst Wall02, requires capital investment, Wall03 could represent a method which uses less detergent and sanitiser but still allows a valid clean.

Data collection for Cleaning methods is covered in the Field Manual

- Go back to the main menu, Reply “Yes” to update calculations, and press the “Costs and Predictions per Co.” button.
- Select the Company “An Example Company”
- Select “Cost Predictions” button
- Select “Key Item”, then OK
- Press “Add New” Button to create a cost prediction
- Type in a Code: Eg01a (TAB to move to next field)
- Enter Description “Clean twice a day, using Method 01” (TAB to move to next field)
- Enter Dates : 01/05/2000 to 01/06/2000
- Select the “Notes” Button to Enter/Edit the Cleaning Schedule
- Enter the following:

Reception Walls, Method Wall01, 200 Sq. M, Cleaned 2 x a Day
Process Walls, Method Wall01, 400 Sq. M, Cleaned 2 x a Day
Packing Room Walls, Method Wall01, 250 Sq. M, Cleaned 2 x a Day

- Return to the Cost Prediction Screen (Back One Screen)
- Notice the Prediction has been calculated, but as no actual figures have been entered, we do not have anything for comparison
- View the Report to see the cost predictions output.
- Press “File” then “Close” to close the report.

The report shows the predicted costs based on manual entries, therefore the quantities used are unknown, as resources were not entered into the Cleaning Methods.

This can be used to quickly look at different cost predictions that are perhaps based on average cost of cleaning similar surfaces or other mathematical permutation.

We can create several more predictions to demonstrate the use of comparing different cleaning schedules and methods. Here we assume that no comparison will be required

- Press “Add New” button, Code: EG02a
- Enter Description “Clean twice a day, using Method 02” (TAB to move to next field)
- Enter Dates : 01/05/2000 to 01/06/2000
- Select the “Notes” Button to Enter/Edit the Cleaning Schedule
- Enter the following (Copy & Paste from EG01 can be used):

Reception Walls, Method Wall02, 200 Sq. M, Cleaned 2 x a Day
Process Walls, Method Wall02, 400 Sq. M, Cleaned 2 x a Day
Packing Room Walls, Method Wall02, 250 Sq. M, Cleaned 2 x a Day

- Return to the Cost Prediction Screen (Back One Screen)

Now enter a Third Prediction

- Press “Add New” button, Code: EG03a
- Enter Description “Clean twice a day, using Method 03” (TAB to move to next field)
- Enter Dates : 01/05/2000 to 01/06/2000
- Select the “Notes” Button to Enter/Edit the Cleaning Schedule
- Enter the following (Copy & Paste from EG01 can be used):

Reception Walls, Method Wall03, 200 Sq. M, Cleaned 2 x a Day
Process Walls, Method Wall03, 400 Sq. M, Cleaned 2 x a Day
Packing Room Walls, Method Wall03, 250 Sq. M, Cleaned 2 x a Day

- Return to the "Cost & Predictions" screen
- View the Reports, - Company Reports – All Cost Predictions (Update Calculation: Yes)
- Use the arrows at the bottom of then screen to change pages. Press "File" then "Close" to close the report.
- Return to the Main Menu, (Update Calculation: No), View the Report: All Cost Predictions
- This shows the different costs for the three predictions
- Next Return to the "Cost Predictions Screen" and enter three more Prediction, naming these EG01b, EG02b, EG03b. These are identical to EG01a, EG02a, EG03a but only cleaning once a Day instead of twice a Day.
- The Reports will now show all six predictions
- To exit from Cleanse-IT, press the door button on the Main Menu.

2.4 User Example – Computer based activity

- From the CD, press the Software button (left-hand side of screen).
- Now press the Cleanse-IT button and select Cost Predictions from the options and press OK.
- Next select the Blank Data Set options and press ok.
- After a short delay, Cleanse-IT is loaded with an empty data set. First, information about the Programs and Data's location is displayed, press OK. There is no need to update the calculations, select "No".
- Press the Global Settings button (spanner), you can now enter the required set up data to enable the cost predictions to be examined. The data collection protocols and methodology are contained in the Field manual (under development Sept 2000)

Step 1 – Define Set up Information.

- Press the Companies button and add The Little Fishy Company.
- Now press the Key Items in Factory button and add Wall, Table and Floor, all measured by area.
- Now press the Chemicals button and add the following:

LS	Liquid Soap	%	100%	1000	1 Litres
CaH	Calcium Hypo.	ppm	40,000	600	1 Litres

- Next, press the Labour button and enter;

Lab	Cleaning Staff	400	1 hr

- Press the Chemical Dilutions button and add information for 100% Liquid Soap and 40,000 ppm Calcium Chloride.

Step 2 – Enter Cleaning Method Information

The Little Fishy Company are considering a change in it's cleaning methods. Here is a list of the new methods they hope to use.

Method	Cost	Size
Wall	1000	15 sq metres
Floor	1500	10 sq metres
Table	175	1 sq metre

- Press the Cleaning Methods button, then choose Key Item and press OK.
- Now enter the above cleaning methods, by pressing the Add New button.
- The resources required do not need to be entered.

Step 3 – Enter Company Actuals

- Return to the Main Menu, and press Yes to update the calculations.
- Now, press the Costs and Prediction per CO button and select The Little Fishy Company.
- Press the Labour button and enter the costs, as above.
- Press the Chemicals button, and enter the cost as above.
- Return to the Main Menu and press No.
- Now press the Actual Resources Used per Co button, and select The Little Fishy Company.
- Select Key Item and press OK.
- Enter the information from below:

2/2/00	All Areas Records	All items	100% Liquid Soap	31 Litres
2/2/00	All Areas Records	All Items	40,000 CaHypo	20 Litres

- Select Labour from the top and enter:

2/2/00 All Areas All Items Cleaning Staff 80 Hrs Records

Step 4 – Enter Cost Prediction

- Return to the Main menu and press Yes to update the calculations.
- Now press the Cost and Predictions per Co button and select The Little Fishy Company.
- Press the Cost Predictions button, choose Key Item and press OK.
- To add a new prediction, press the add new button.
- Enter a code "Predict 1" and relate to actuals form 2/2/2000 – 2/2/2000
- Press the notes button, and enter the information below,

12 walls total size = 120 sq metre cleaned twice a day with Wall method
3 floors total size = 50 sq metres cleaned four times a day with Floor method
6 tables total size = 15 sq metres cleaned six times a day with Table method.

The factory currently spend 75,000 Ug Sh on cleaning a day. Is it worth their while to change methods? How much money would they save in a year?

- Press the Report button to see the variances. Press "File" then "Close" to close the report.
- To exit from Cleanse-IT, press the door button on the Main Menu.

2.5 Software Review – Paper based activity

- Complete the Cleanse-IT Cost Predictions review sheet

3. Melting Rates (Ice-IT)

3.1 Theoretical – Computer based activity

- From the CD, press the Software button (left-hand side of screen)
- Now press the Ice-IT button and select Melting Rates from the options and press OK.
- Next select the Theoretical option and press ok.
- After a short delay, you will see a video of the software being used.

- Use the control panel to pause, stop and fast forward the video. When the video has finished, press the X in the top right corner to close the control panel.

3.2 Practical – Computer based activity

- From the CD, press the Software button (left-hand side of screen)
- Now press the Ice-IT button and select Melting Rates from the options and press OK.
- Next select one of the Practical options and press ok.
- After a short delay, Ice-IT is loaded with data from Uganda/Morocco.
- Press the Container Information & Melting Rate Trials button, you can now see some real data from melting rate trials.

3.3 User Example – Computer based activity

- From the CD, press the Software button (left-hand side of screen)
- Now press the Ice-IT button and select Melting Rates from the options and press OK.
- Next select the Blank Data set option and press ok.
- After a short delay, Ice-IT is loaded with an empty data set.

Step 1 – Define Container Details

- Press the Container Information & Melting Rate Trials button
- Press the "Add new" button, you can now enter the following data to calculate the average melting rate in Kgs/^{o}C/Hr.

Code	EG1 Example container
Construction	Polypropylene 5mm thick
Volume	50 Litres
Surface Area.	1 Sq. Metres

Cost and life span information is not needed for this example.

Step 2 - Trial Details

See Ice Trial Protocol for how these results are obtained.

Note: following the protocol gives real times and weights of ice plus container. These then need to be converted to time passed and Kgs of ice melted to be entered in the software

- Press the Add/Edit Ice Melting Rate Trials button.
- Now press the Add new button and enter information for Trial 1 from the table below.
- Press the Add new button again and enter the data from trials 2 and 3.

15Kg flake iced used, Avg. temp 15°C

Trial1		Trial2		Trial3	
Hrs	kg ice left	Hrs	Ice left	Hrs	Ice left
0.0	15 Kgs	0.0	15 Kgs	0.0	15 Kgs
0.5	11.4 Kgs	0.5	11 Kgs	0.5	12.4 Kgs
1.0	8.3 Kgs	1.0	7.8 Kgs	1.0	9.5 Kgs
1.5	5.9 Kgs	1.5	5.4 Kgs	1.5	7.4 Kgs
2.0	3.4 Kgs	2.0	2.3 Kgs	2.0	5.2 Kgs
2.5	1 Kgs	2.5	1.4 Kgs	2.5	2.1 Kgs

- Press the report button to see the trial information.
- To close the report, press “File” then “Close”.
- Return to the Container Information screen and see the average Melting Rate displayed 0.360Kgs/C/hr
- From the main menu, press the door button to exit Ice-IT

4.4 Review – Paper based activity

- Complete the Ice-IT Melting Rate Trials Review Sheet.

4. Icing Trials (Ice-IT)

4.1 Theoretical – Computer based activity

- From the CD, press the Software button (left-hand side of screen)
- Now press the Ice-IT button and select Trials from the options and press OK.
- Next select the Theoretical option and press ok.
- After a short delay, you will see a video of the software being used.
- Use the control panel to pause, stop and fast forward the video. When the video has finished, press the X in the top right corner to close the control panel.

4.2 Practical Example – Computer based activity

- From the CD, press the Software button (left-hand side of screen)
- Now press the Ice-IT button and select Trials from the options and press OK.
- Next select one of the Practical options and press ok.
- After a short delay, Ice-IT is loaded with data from Uganda/Ghana.
- Press the Icing Trials Data button, you can now see some real data from icing trials.
- From the main menu, press the door button to exit Ice-IT

4.3 User Example – Computer based activity

- From the CD, press the Software button (left-hand side of screen)
- Now press the Ice-IT button and select Trials from the options and press OK.
- Next select the Blank Data Set options and press ok.
- After a short delay, Ice-IT is loaded with an empty data set.
- Enter the following information to calculate the cost of a trip.

Step 1 – Enter Set-Up Information

- Press the Maintenance Menu button (spanner).

Some Quality Tests, Insulation Materials, Raw Material, and Types of Ice information is already entered.

- Change the Currency Symbol to Ug Sh
- Press the Company names button and enter:

Code BigB Name Big Boat Company

- Press the Other Direct Costs button and enter the following:

Code	Description	Unit Cost	Units Used
Fuel	Motor Fuel	1000	Litre(s)

- Now enter this information into Indirect Costs:

Code	Description	Unit Cost	Units Used	Life Span	Avg Journey
Net	Fishing net	500	net(s)	10	12
Motor	Motor	6500	motor(s)	50	12

- Press the Transportation button and enter:

NA	Not applicable

- Next, press the End Products button and enter:;

Red	Red Snapper	2500 Ug Sh

- Now press the Journey stages button and enter:

00	Start
10	Island
20	Landing Site

Increments of ten are used, so a new stage can easily be added if necessary.

Step 2 – Container Information

- Return to the main menu and press the Container Information and Melting Rate Trials button.
- Now press the Add new button, and enter the following information:

Code	Canoe
Description	Lined canoe
Volume	500L
Surface Area	8 Sq M
Layer 1	Wood 8mm
Layer 2	Polystyrene 15mm
Layer 3	Aluminum 2mm
Cost	1,000,000 Ug Sh
Life Span	150 journies
Avg Journey	12 hrs

Step 3 – Enter Trial Details

- Go back to the main menu, and select the Icing Trials Data button.
- Press the Add new button, and read the information below. Enter the information into the Details, Journey and Costs screens.

A canoe from the Big Boat Company set out to sea at 6am on the 4th April 2000 and returned at 6pm the same day. The fisherman took his catch of 100kg of red snapper (which he caught using a net and had been keeping in the fish hold of his boat) to an island at 12pm. Here he covered the fish with 85kg of large flake ice. He then set off back to the landing site where he arrived at 6pm with 20kg of ice left. During the trip the average temperature was 29C and 15L of fuel was used. He sold all of his fish for 2,500Ug Sh per kg.

Note: only one motor was used, the fish cost nothing to start with, the transport should be described as “Not Applicable”, and the end product is Red Snapper.

The gross profit from the trip should be 219,653 Ug Sh.

- From the main menu, press the door button to exit Ice-IT

4.4 Review – Paper based Activity

- Complete the Ice-IT Icing Trials Review Sheet.

5. Ice Calculator (Ice-IT)

5.1 User Example – Computer based activity

- From the CD, press the Software button (left-hand side of screen)
- Now press the Ice-IT button and select Ice Calculator from the options and press OK.
- Next select the Blank Data Set options and press OK.
- After a short delay, Ice-IT is loaded with an empty data set.

Trial No.1

Effect of Ambient Temperature and Journey Time on Ice Usage

- From the main menu, press the Container Information and Melting Rate Trials button.
- Press the add new button and enter information for the following container:

Code	Box1
Description	Lined Vegetable fibre box
Volume	65L
Surface Area	1 Sq M
Layer 1	Wood 10mm
Layer 2	Vegetable Fibre 5mm
Layer 3	Aluminum 1mm

- Select Theoretical and press the Recalculate button. The melting rate should be 0.0679.
- Go back to the main menu, and press the ice Calculator button.
- Enter the information below

Fish Temperature:	15 °C
Product:	White Fish

Amount:	1,000 Kgs
Ice:	Crushed Ice
Wastage:	4 %

- Try the following times and temperatures

Journey Time:	20 Hours and 25 hours
Ambient Temperature	Vary from 20°C to 25°C

- Press the View results button to see what effect they have on Total Ice Required.
- To close the report, press “File”, then “Close”.

Trial No.2 - Effect of thickness of Insulation material

- From the Main Menu, press the Container Information and Melting Rate Trials button.
- Press the add new button and enter information for the following containers;

Code	Box2
Description	Foam Insulated Box
Volume	65L
Surface Area	1 Sq M
Layer 1	Polyurethane 10mm

- Choose Theoretical and press Recalculate. The melting rate should be 0.0269

Code	Box3
Description	Vegetable Fibre Box
Volume	65L
Surface Area	1 Sq M
Layer 1	Vegetable Fibre 5mm

- Choose Theoretical and press Recalculate. The melting rate should be 0.1032
- Go to the main menu and press the Ice Calculator button, then enter the following information

Fish Temperature:	15 °C
Ambient Temperature	25°C
Journey Time:	12 Hours
Product:	Red Snapper
Amount:	1,000 Kgs

Ice:	Flake Ice
Wastage:	4 %

- Press the View results button and look at the amount of ice needed for the different containers.
- Now go back to the Container Information screen and try varying the thicknesses of the polypropylene in the Foam insulated box from 10mm-50mm, and the Vegetable fibre in the Lined Vegetable Fibre box from 10-50mm.
- See what effect this has by using the Ice Calculator again.
- From the main menu, press the door button to exit Ice-IT

5.2 Review – Paper based activity

- Complete the Ice-IT Ice Calculator review sheet.

6. Log IT

6.1 Theoretical – Computer based activity

- From the CD, press the Software button (left-hand side of screen)
- Now press the Log-IT button and select Theoretical from the options and press OK.
- After a short delay, you will see a video of the software being used.
- Use the control panel to pause, stop and fast forward the video. When the video has finished, press the X in the top right corner to close the control panel.

6.2 User Example – Computer based activity

- From the CD, press the Software button (left-hand side of screen)
- Now press the Log-IT button and select Blank Data Set from the options and press OK.
- After a short delay, Log-IT is loaded with an empty data set.
- You can now enter the following data

Step 1 – Setting Up

- From the main menu, press the Set Up Menu button.

The Quality Tests are already set up, Sampling Locations aren’t needed for this example.

- Press the End Product button and enter;

Hless	Headless fish	250/kg	75% yield

- Now read the following information and enter it into the factory Areas, Hygiene Checklist and Company Resources areas. The name of the factory can be entered at the top of the Set Up Menu screen.

First Class Fishery:

Consists of an intake, processing and a packaging area.

All items in each area are checked twice daily by the hygiene supervisor, Mr Thomas Jones.

100% Liquid Soap and 40,000 ppm Calcium Hypochlorite are bought by the litre at a cost of 600 and 350 respectively.

Production staff are paid 350/hour.
Cleaning staff are paid 400/hour.

- Now return to the main menu. Press the production Details button, and then enter the following information;

On the 5th of June 2000 the following production took place:

Batch 1 15,000kgs of Nile Perch and 20,000kgs of ice
Batch 2 17,500kgs of Nile Perch and 15,000kgs of ice
Batch 3 8,000kgs of Nile Perch and 12,000kgs of ice

From all of these batches 31,995kg of end product was produced.

25 production staff were used that day

- Now return to the main menu, and press the Sanitation Resources button. This information can be added here:

Time	Area	Resource	Amount
12:00	Stores	Liquid Soap	25 Litres
12:00	Stores	Calcium Hypochlorite	12 Litres
12:00	Intake	Liquid Soap	4 Litres
12:00	Intake	Calcium Hypochlorite	2 Litres
12:00	Intake	Cleaning Staff	1 hour
13:00	Processing	Liquid Soap	15 Litres
13:00	Processing	Calcium Hypochlorite	7 Litres
13:00	Processing	Cleaning Staff	4 hours
17:00	Packaging	Liquid Soap	6 Litres
17:00	Packaging	Calcium Hypochlorite	3 litres
17:00	Packaging	Cleaning Staff	2 hours

- Now return to the main menu and press the Hygiene Checks button.
- Press the Build Checklist for Data Entry button, this will copy the list that has been set up.
- Now enter the following:

The factory was inspected at 09:00 and at 20:00. All areas except the Stores passed the first inspection. The floor there needed a re-clean and a request for one was put in. This was later re-checked and passed.

All areas passed the second inspection.

- Enter similar data for another day's production and take a look at the reports.

6.3 Review – Paper based activity

- Complete the Log-IT software review sheet.

Ice-IT Ice Calculator Examples Sheet

Name _____

Using the information given, calculate the fish:ice ratio needed for the following scenario:

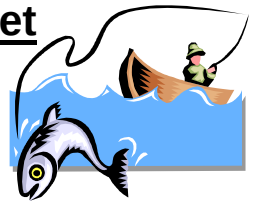
A trip is being planned to take (Mf) 100kg of Red Snapper from one island to the next. The journey will last (T) 3 hours and the fish will be carried in blue 50L plastic boxes.The average air temperature (Te) is 32C and the fish will be taken from a chiller which cools the fish to (Tf) 5C. Large flakes of ice are available for the journey, and (PCLoss) 3% wastage is expected.

Fish	specific heat of fish (Cpf) = 0.78	Fish volume (Vf)= 1466.8
Ice	Equilibrium water (% wgt/wgt) = 16	Ice volume (Vi) = 1731
Box	material = 8mm polypropylene melting rate (k) = 0.1849	Volume (Vc) = 50L S.A. = 0.86 sqm

IceReqd = Cpf * Tf * Mf /80
x = (Mf * Vf + IceReqd * Vi) / (1000 * Vc - k * Te * t * Vi)
BoxesReqd = (x + 1)
IceMelted = k * Te * t * BoxesReqd
IceLoss = (IceReqd + IceMelted) * PCLoss / 100
TotalIce = IceReqd + IceMelted + IceLoss
IceRatio = TotalIce / Mf

Name _____

Ice-IT Icing Trials Examples Sheet



Name

From the information given below,

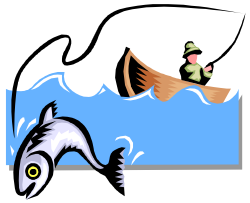
Calculate the cost of the trip.

A canoe from the Big Boat Company set out to sea at 6am on the 4th April 2000 and returned at 6pm the same day. The fisherman took his catch of 100kg of red snapper (which he caught using a net and had been keeping in the fish hold of his boat) to an island at 12pm. Here he covered the fish with 85kg of large flake ice. He then set off back to the landing site where he arrived at 6pm with 20kg of ice left. During the trip the average temperature was 29C and 15L of fuel was used. He sold all of his fish for 2,500Ug Sh per kg.

Note: the transport should be described as being the same as the container in the software, and the end product is Red Snapper.

Canoe:	Ice costs 100 UgSh per kg
500L Volume	Fuel costs 1000Ug Sh per litre
8 sq m Surface area.	Fishing net 500 Ug Sh life span
8mm wood	of 10 journies
15 mm polystyrene	Motor costs 6500 Ug Sh life
2mm aluminium	span of 50 journies
Cost 1,000,000 Ug Sh	
Life span 150 journies	

Name



Ice-IT Melting Rate Examples Sheet

Name _____

Calculate the Average Melting rate in kgs/^{o}C/Hr, by hand and by using the software.

Box Details

	Volume	S.A.
Plastic box 5mm thick	50L	1Sqm

Trial Details

- see Ice Trial Protocol for how these reults are obtained.
Note: following the protocol gives real times and weights of ice plus container. These then need to be converted to time passed and kgs of ice melted to be entered in the software

15Kg flake iced used Avg temp 15C

Trial1		Trial2		Trial3	
Hrs	kg ice left	Hrs	kg ice left	Hrs	kg ice left
0.0	15	0.0	15	0.0	15
0.5	11.4	0.5	11	0.5	12.4
1.0	8.3	1.0	7.8	1.0	9.5
1.5	5.9	1.5	5.4	1.5	7.4
2.0	3.4	2.0	2.3	2.0	5.2
2.5	1	2.5	1.4	2.5	2.1

$$K = \frac{\text{Mass of ice melted in given time interval}}{\text{(time interval) x Environment temperature}}$$

Name _____

Cleanse-IT Cleaning Method Examples Sheet

Name

From the information given below, calculate the cost for cleaning one sq metre of a wall.

The cleaning procedure used in the Big Company factory for cleaning their 50 sq metre wall is as below:

1. Scrub wall with brush using 15L of 10% Liquid Soap for 15 mins
2. Rinse wall using hose for 5 mins
3. Spray wall with 5L of 100ppm Calcium Hypochlorite for 5 mins

100% Liquid Soap costs 2000 Ug Sh per litre
100ppm Calcium Hypochlorite costs 500 Ug Sh per litre
Labour costs 500 Ug Sh per hour
Water costs 650 Ug Sh per 1000 Litres

Name

Cleanse-IT Cost Predictions Example Sheet

Name ----------

Using the information given below, predict the cost of cleaning the factory.

The Little Fishy Company are considering a change in it's cleaning methods. Here is a list of what needs cleaning and the new methods they hope to use.

12 walls total size = 120 sq metre cleaned twice a day

3 floors total size = 50 sq metres cleaned four times a day

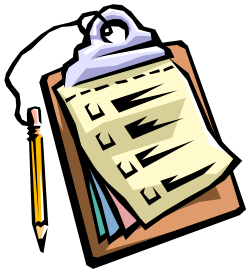
6 tables total size = 15 sq metres cleaned six times a day

Method	Size	Cost
Wall	15 sq metres	1000
Floor	10 sq metres	1500
Table	1 sq metre	175

The factory currently spend 75,000 Ug Sh on cleaning a day. Is it worth their while to change methods? How much money would they save in a year if they work 250 days a year?

Name

Log-IT Data Logging Examples Sheet



Log the following factory data into the program:

First Class Fishery:

Consists of an intake, processing and a packaging area.

All items in each area are checked daily by the hygiene supervisor, Mr Thomas Jones.

100% Liquid Soap and 40,000 ppm Calcium Hypochlorite are bought by the litre.

Headless fish are sold.

On the 5th of June 2000 the following production took place:

Batch 1 15000kgs of Nile Perch and 20000kgs of ice

Batch 2 17500kgs of Nile Perch and 15000kgs of ice

Batch 3 8000kgs of Nile Perch and 12000kgs of ice

From all of these batches 31995kg of end product was produced.

25 production staff were used that day

25 Litres of 100% liquid soap, 12 litres of Calcium hypochlorite were used.

The hygiene checklist was carried out and all areas passed.

Enter similar data for another day's production and take a look at the reports.

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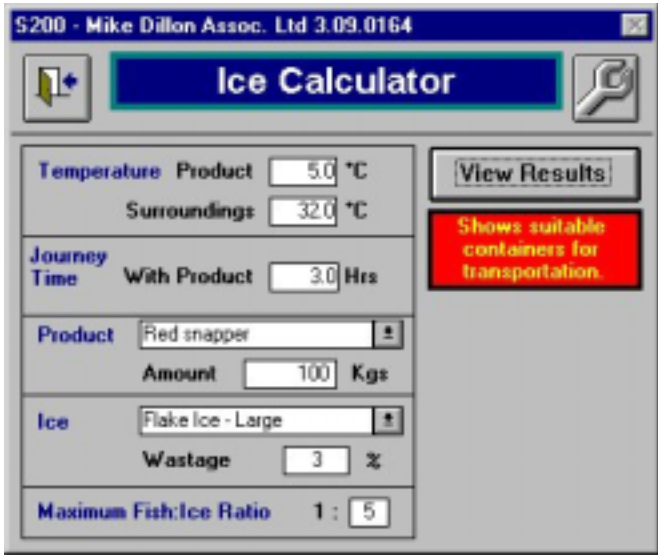
ANSWER SECTION

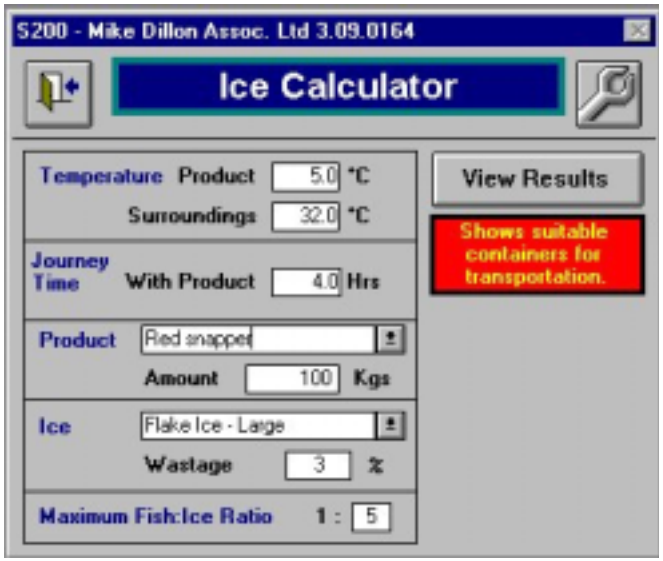
Ice-IT Ice Calculator Answers

A trip is being planned to take (Mf) 100kg of Red Snapper from one island to the next.
The journey will last (T) 3 hours and the fish will be carried in blue 50L plastic boxes.
The average air temperature (Te) is 32C and the fish will be taken from a chiller which cools the fish to (Tf) 5C
Large flakes of ice are available for the journey, and (PCLoss) 3% wastage is expected.

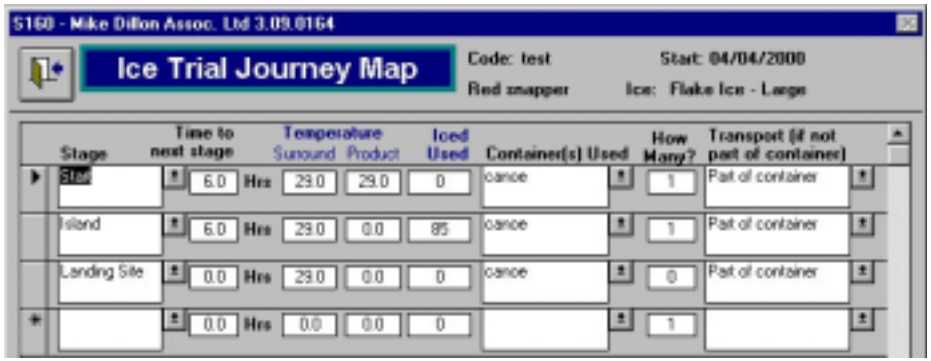
Fish	specific heat of fish (CF) = 0.78	Fish volume (VF)= 1466.8
Ice	Equilibrium water (% wgt/wgt) = 16	Ice volume (VI) = 1731
Box	material = 8mm polypropylene melting rate (K) = 0.1849	Volume (VC) = 50L S.A. = 0.86 sqm

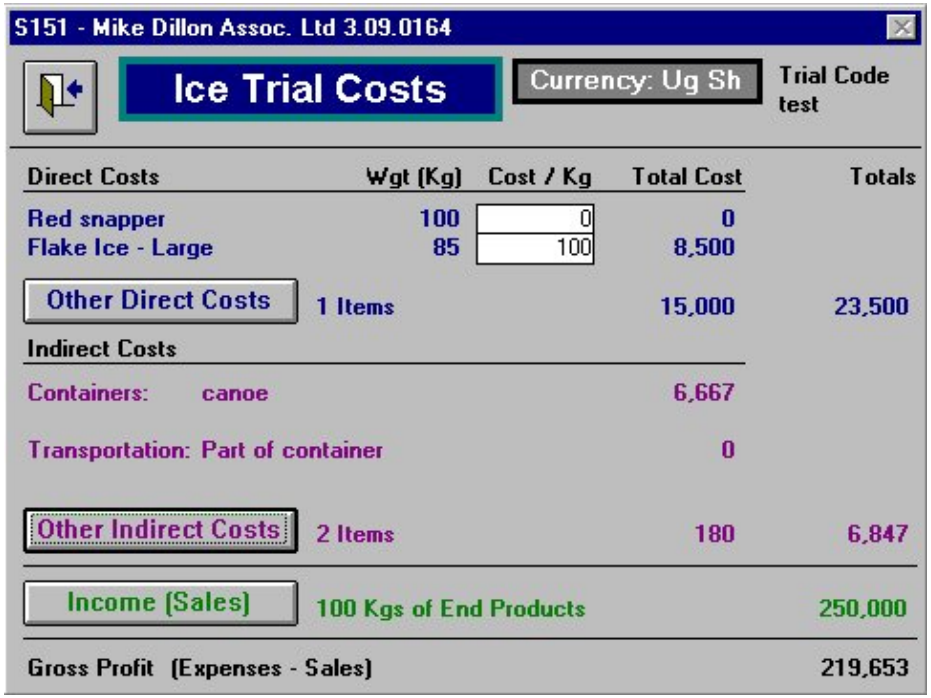
IceReqd = Cpf * Tf * Mf /80	4.875
x = (Mf * Vf + IceReqd * Vi) / (1000 * Vc - k * Te * t * V	8.048052373
BoxesReqd = (x + 1)	9.048052373
IceMelted = k * Te * t * BoxesReqd	160.6065488
IceLoss = (IceReqd + IceMelted) * PCLoss / 100	4.964446465
TotalIce = IceReqd + IceMelted + IceLoss	170.4459953
IceRatio = TotalIce / Mf	**1.704459953**
4hr journey -	**4.48057**





Ice-IT Icing Trial Answers





Ice-IT Icing Trial Answers

A canoe from the Big Boat Company set out to sea at 6am on the 4th April 2000 and returned at 6pm the same day. The fisherman took his catch of 100kg of red snapper (which he caught using a net and had been keeping in the fish hold of his boat) to an island at 12pm. Here he covered the fish with 85kg of large flake ice. He then set off back to the landing site where he arrived at 6pm with 20kg of ice left. During the trip the average temperature was 29C and 5L of fuel was used. He sold all of his fish for 2,500Ug Sh per kg.

Note: the transport should be described as being the same as the container in the software, and the end product is Red Snapper.

Canoe

500	L	100	ice	
8	sq m	1000	fuel	
8	mm wood	500	net	10
15	mm polystyrene	6500	motor	50
2	mm alumin			
1000000	UgSh			
150	journies			
12	hr/journey			

Cost =		Income =	250000
Canoe	6666.667		
ice	8500		
fuel	15000	**Profit =**	**219653**
net	50		
motor	130		
Total	30346.67		

Ice-IT Melting Rate Answers

$$K = \frac{\text{Mass of ice melted in given time interval}}{\text{(time interval) x Environment temperature}}$$

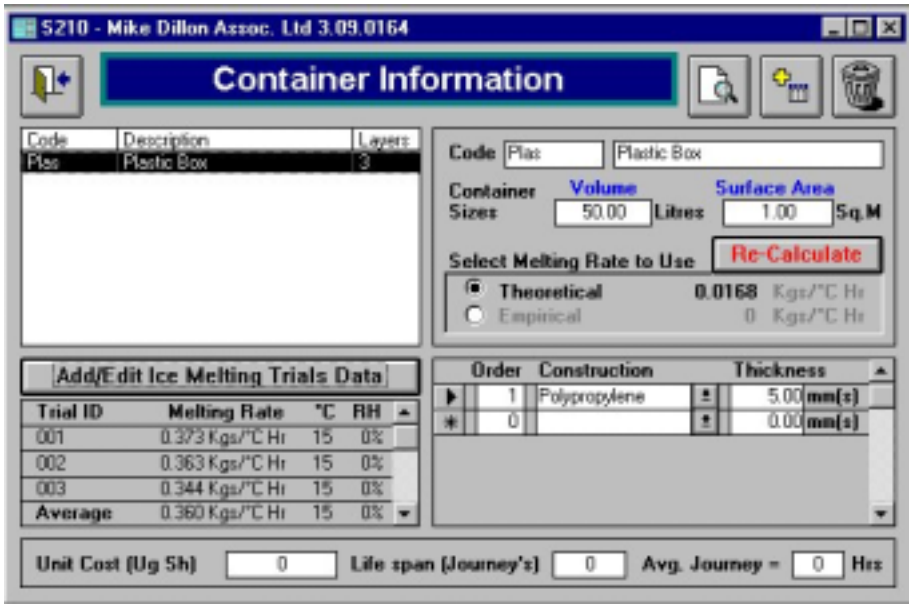
Trial 1 $K = \frac{14}{2.5 \times 15} = 0.373333$

Trial 2 $K = \frac{13.6}{2.5 \times 15} = 0.362667$

Trial 3 $K = \frac{12.9}{2.5 \times 15} = 0.344$

Average = 0.3600

Ice-IT Melting Rate Answers



Cleanse-IT Cleaning Methods Answer

The cleaning procedure used in the Big Company factory
for cleaning their 50 sq metre wall is as below:

1. Scrub wall with brush using 15L of 10% Liquid Soap for 15 mins
2. Rinse wall using hose for 5 mins
3. Spray wall with 5L of 100ppm Calcium Hypochlorite for 5 mins

Costs

2000	100% LS	litre
500	Cal	litre
500	lab	hour
650	water	1000 litres

	amount	unit cost	total
10%	15	200	3000
100ppm	5	500	2500
water	50	8.333333	416.666667
lab	25	0.65	16.25
		Total for 50 sqm	5932.91667
		Unit cost	**118.658**

Cleanse-IT Cleaning Method Answers

Standard Cleaning Manual

Reference Code: Wall01 — **Data Collection at Key Item Level**
Validated Procedure: No — **Unit Cost (Ug Sh)** 114.82/Sq.M(s)
Area applied to: All Areas
Key Item applied to: wall

Chemicals: **Labour:** **Equipment:**

Method: Not Defined

Applies to: 50 Sq.M(s) **Notes:**
Standard Units: 50.00 Sq.M(s)

Verification: Not Verified

Water Consumption

Description	Quantity Documented	Standardised Units	Std Unit Cost
Supplied Water	50.00 Litre(s)	50 Litre(s)	0.654Litre(s)
	Total Quantity	**50 Litre(s)**	

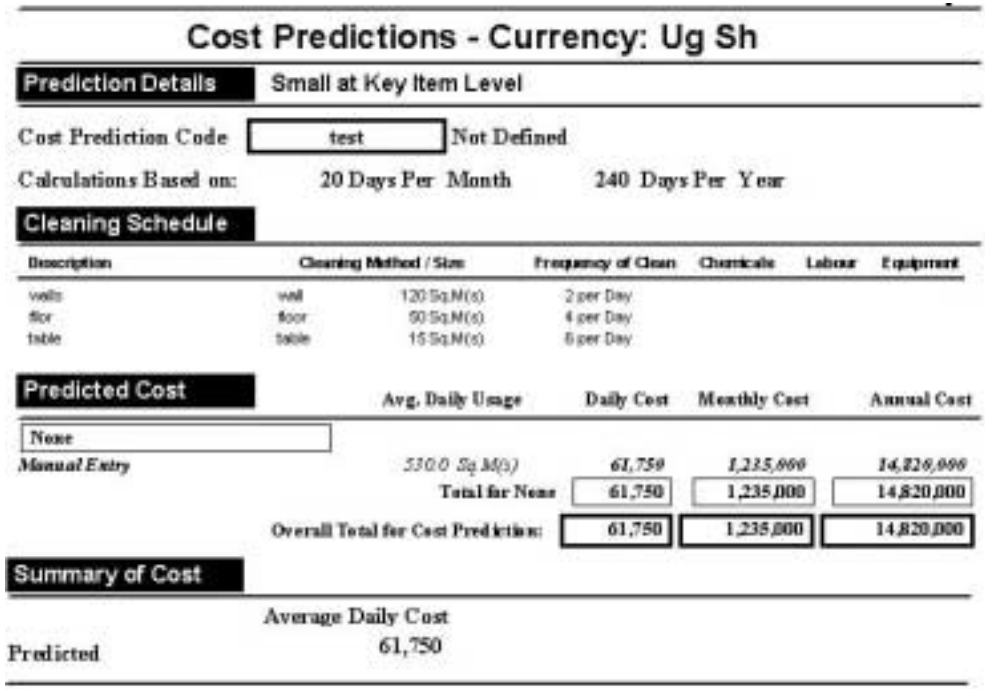
Labour Requirement

Description	Time Documented	Standardised Units	Std Unit Cost
Labour	25.00 Mins	0.42 Hr(s)	500.00Hr(s)
	Total Time	**0.42 Hr(s)**	

Chemical Dilutions and Quantities

Description	Quantity Documented	Standardised Units	Std Unit Cost
100ppm Calcium Hypochlorite	5.00 Litre(s)	5.00 Litre(s)	500.00Litre(s)
10% Liquid Soap	15.00 Litre(s)	15.00 Litre(s)	200.00Litre(s)
	Total Quantity	**20.00 Litre(s)**	

Cleanse-IT Cost Predictions Answers



Cost Predictions - Currency: Ug Sh

Prediction Details Small at Key Item Level

Cost Prediction Code: test — Not Defined

Calculations Based on: 20 Days Per Month — 240 Days Per Year

Cleaning Schedule

Description	Cleaning Method / Size		Frequency of Clean	Chemicals	Labour	Equipment
walls	wall	120 Sq.M(s)	2 per Day			
flor	floor	50 Sq.M(s)	4 per Day			
table	table	15 Sq.M(s)	6 per Day			

Predicted Cost

	Avg. Daily Usage	Daily Cost	Monthly Cost	Annual Cost
None				
Manual Entry	*5300 Sq.M(s)*	*61,750*	*1,235,000*	*14,820,000*
	Total for None	61,750	1,235,000	14,820,000
	Overall Total for Cost Prediction:	61,750	1,235,000	14,820,000

Summary of Cost

	Average Daily Cost
Predicted	61,750

Cleanse-IT Cost Prediction Answers

The Little Fishy Company are considering a change in it's cleaning methods. Here is a list of what needs cleaning and the new methods they hope to use.

12 walls total size = 120 sq metre cleaned twice a day
3 floors total size = 50 sq metres cleaned four times a day
6 tables total size = 15 sq metres cleaned six times a day

Method	Cost	Size
Wall	1000	15 sq metres
Floor	1500	10 sq metres
Table	175	1 sq metre

The factory currently spend 75,000 Ug Sh on cleaning a day. Is it worth their while to change methods? How much money would they save in a year if they work 250 days a year?

to clean	size	unit costs	cost
Walls	240	66.666667	16,000
floor	200	150	30,000
table	90	175	15,750

Total **61,750**
yearly 15,437,500

current per year = 18,750,000

saving = 3,312,500

EMPIRICAL MEASURE OF MELTING RATES OF ICE IN FISH CONTAINERS

Ice only is needed in the test and fish are not involved.

The container should have a lid

PREPARATION

ROUGH ESTIMATION OF TOTAL MELTING TIME
This is required for designing the test.
Fill container with ice and note approximate time required for all the ice to melt. This is the 'rough' melting time = T hours.

CONTAINER DETAILS
Record the internal length, width and depth of the container.
Also note what materials it is constructed of and how thick they are.

The test should be conducted in the shade.

Note air temperature throughout the test and estimate the average.

ACCURATE MEASUREMENTS

Step 1	Weigh container empty.	Record weight
Step 2	Pre-cool internal walls of container to approximately 0°C with ice. Empty and dry the container.	
Step 3	Fill container with fresh ice. Immediately weigh container plus ice. Note precise time.	Record weight, time and air temperature
Step 4	After about T/5 hours have elapsed: Drain water formed by melting ice. Reweigh container. Note precise time.	Record weight, time and air temperature
Step 5	Repeat Step 4 after further periods of about T/5 hours. Obtain a total of 4-5 readings, by which time most of the ice should have melted.	Record weight, time and air temperature

Icing Trial

Step 1	Record measurements about all containers used in the trial.	Record internal and external dimensions, and construction materials and thicknesses
Step 2	Record cost information about containers, transport, ice, and motors etc.	Record cost and life span data for each item
Step 3	Find out how many trips are made in a year, and the average length of a trip	Record trip information

Step 4: For each stage in the journey record:

- The duration
- The amount of ice used
- The ambient and fish temperatures
- The number of containers used
- Quality information
- Transport used

Step 5: Also capture information about:

- Quantity of fish caught
- Quantity and prices of fish sold
- Direct costs incurred

Sanitation Data Collection Methodology

Step 1	Collect factory details and information, check for existing data first.	Use Form A
Step 2	Obtain site plans from factory.	Photocopy 3 times
Step 3	Map product flow and waste product flow (offal). Document using flow chart the process stages, and any product cleaning.	Site plan copy 2 and flow chart
Step 4	Document product sanitation.	Use Form B
Step 5	Take measurements of the environments.	Use Form C (1 per area)
Step 6	Record information about equipment.	Use Form D (1 per area)
Step 7	Use Forms B, C and D to document all unique items and environments that require cleaning, into Form E.	Use Form E
Step 8	Document the cleaning schedule.	Use Form E

Sanitation Data Collection Methodology (cont.)

Step 9	Using forms C & D, document the quantity of equipment and the costs.	Use Form F
Step 10	Using forms C & D, document the cleaning equipment and the costs.	Use Form G
Step 11	Document the service costs, labour rates and cleaning chemicals used. Record actual usage of resources, by area if possible.	Use Form H
Step 12	Document personnel flow.	Site plan copy 3
Step 13	Document visitors flow.	Site plan copy 3
Step 14	Document packaging flow and equipment.	Site plan copy 2
Step 15	Document all other areas not included in steps 3, 11, 12 and 13.	Use Form A
Step 16	Photocopy any cleaning procedures that are available.	

Acknowledgements

Our appreciation goes to following organisations and companies for their contributions towards this project:

- The Fishery Industries Division at the Food and Agricultural Organisation
- Department For International Development, London, UK
- Natural Resources Institute, Chatham Maritime, UK

Uganda

- Project Leaders - NARO / Food Science Research Institute, Kampala,
- National Bureau of Standards, Kampala
- Greenfields (Uganda) Ltd, Entebbe
- Marine and Agro Exports Ltd, Jinja
- Byansi Ltd, Masaka
- Masese Ltd, Kampala
- Gomba Fishing Industries Ltd, Jinja
- Hwan Sung Ltd, Kampala
- Uganda Fish Packers Ltd, Kampala
- Uganda Marine Products Ltd, Kampala
- Nge-Ge Ltd, Kampala
- Victoria Foods Ltd, Kampala
- Members of the fishing community – Landing Sites and Islands
- Fisheries Training Institute, Entebbe

Ghana

- Project Leaders – Department of Fisheries
- Ghana Standards Board, Accra
- Divine Seafood's Company, Accra
- IT Ghana, Accra
- Members of the fishing community