

## Exercise RECP: Detailed option identification for a fish processing company



The company processes and cans fish, mainly sardines, with different packaging media, including vegetable oil, tomato sauce, brine and/or hot pepper sauce.

The company receives both fresh and frozen unprocessed fish. The frozen fish is thawed with water. A brine (salt) solution is prepared on site to brine thawed and fresh fish. The brined fish is cleaned in a heading and eviscerating operation, upon which the fish is washed with fresh water.

Next the fish is cooked (in steam heated kettle) and cooled (using cooling water). The fish is then mixed with its packaging media, and transferred into feeding hopper for the canning line.

Cans are seamed, washed and filled on a continuous line. Cans are then loaded onto trolleys for sterilization in steam heated autoclave. After sterilization, cans are air cooled and then labelled and packed in boxes for distribution.

### Task 1: Materials Efficiency and Waste Minimization

The fish canning factory has three main waste streams, respectively:

- offal (from fish cleaning);
- spillage and off specification fish;
- and off specification cans.

Using the table presented below, please provide some suggestions for minimizing each waste stream and thereby improving materials efficiency.

**Task 1: Materials Efficiency and Waste Minimization**

Table: Identification of options to reduce waste

Waste stream	Main source	Applicable RECP practise (please tick)								Specific RECP suggestion
		GH	IS	PC	EM	TC	OR	BP	PM	

GH= Good Housekeeping, IS = Input Substitution; PC = Process Control; EM = Equipment Modification; TC= Technology Change; OR = Onsite Reuse;  
 BP = By Product and PM = Product Modification

**Task 2: Water Efficiency and Waste Water Reduction**

The fish canning factory uses water for processing fish (brining, cleaning and cooking), for cleaning purposes (equipment and shop floor), for cooling purposes and for raising steam. Using below table, please provide some initial suggestions for improving water efficiency and resulting reductions of waste water, both in terms of its volume as well as the pollution load.

Table: Identification of options to reduce waste

Waste stream	Main source	Applicable RECP practise (please tick)								Specific RECP suggestion	Impact on waste water	
		GH	IS	PC	EM	TC	OR	BP	PM		Load	Volume

GH= Good Housekeeping, IS = Input Substitution; PC = Process Control; EM = Equipment Modification; TC= Technology Change; OR = Onsite Reuse; BP = By Product and PM = Product Modification

**Task 3: Energy Efficiency**

The fish canning factory uses energy in form of electric power (freezers, process equipment, lighting etc.) and steam (generated on site using fuel oil). Using table below, provide some suggestions for improving energy efficiency through the reduction of steam usage in the process.

Table: Identification of options to reduce energy consumption

Waste stream	Main source	Applicable RECP practise (please tick)								Specific RECP suggestion
		GH	IS	PC	EM	TC	OR	BP	PM	

GH= Good Housekeeping, IS = Input Substitution; PC = Process Control; EM = Equipment Modification; TC= Technology Change; OR = Onsite Reuse;  
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#### Task 4: Synergies

Looking at your findings under tasks 2, 3 and 4 are there any synergies between reducing waste product and increasing efficiency in water and energy use? If so, which?