Schedule 2B Mass Balance for Non-Diversion Guidance for Accounting Processing

Objective

This paper exemplifies the proper use of the table for verification of activities as well as non-diversion calculation at Schedule 2 plant sites when there is processing activities of Schedule 2B chemical(s) to a final concentration either >30% or ≤30%[1].

It is intended to: (1) have a consistent reporting approach for all Schedule 2B type of inspections involving processing to a final concentration either >30% or ≤30%, (2) optimize the calculation process, as well as (3) minimize mistakes during the mass balance calculation.

It suggests a small change in the format (i.e. renaming '**Processing ≤30%**' to '**Quantity ≤30%**') as well as calculation equation embedded in closing stock.

Guiding principles:

1. Processing >30%: When there are processing activities and the final concentration of the declared Schedule 2B chemical is **above 30%**, the processed quantity **should not be deducted** from the mass balance. The quantity of the Schedule 2B chemical processed will be reflected in the current stock, transfers or exports (See example 1 below).
2. Processing ≤30%: When there are processing activities and the final concentration of the declared Schedule 2B chemical is **below or equal 30%**, the processed quantity **should be deducted** from the mass balance. This processed quantity **has to be added to the line 'Quantity ≤30%'** (See example 2 below).

   *In the case where the initial concentration of the processed Schedule 2B chemical is below or equal 30% and the final concentration above 30%, the former should be **added** to the mass balance (see example 4 - Exception).*
3. Current stock, transfers or export should only account for Schedule 2B quantities if its concentration is above 30%.
4. Stock adjustment and losses **should not** be added to the mass balance calculation. In case the plant site follows any procedure for stock adjustments, these could be described by the Inspection Team to support the justification of any discrepancy encountered.
5. The closing stock calculation will be based on the following equation:

Closing stock = Opening Stock + Purchase + Import + Production - Consumption - Quantity ≤30% - Transfers - Export

[1] Reference C-V/DEC.19, dated 19 May 2000

Example 1: Processing to a final concentration of Schedule 2B chemical >30%

Consider a plant that processes, by means of dilution, a Schedule 2B chemical from **95%** concentration to blends with final concentrations varying between **40 to 80%** of the Schedule 2B chemical.

The table below shows the quantities declared by a State Party as well as those verified by the IT. All calculations are based on 100% of the declared Schedule 2B chemical.

	2016		2017		2018		2019	
	Decl.	**Verif.**	**Decl.**	**Verif.**	**Decl.**	**Verif.**	**Decl.**	**Verif.**
Opening stock	n.a.	12.50	n.a.	10.00	n.a.	8.00	n.a.	5.00
Purchase (domestic)	n.a.	0.00	n.a.	0.00	n.a.	0.00	n.a.	0.00
Import	15.00	15.00	18.00	18.00	15.00	15.00	10.00	10.00
Production	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Processing	20.50	20.50	22.00	22.00	19.00	19.00	20.00	18.00
Quantity ≤30%	n.a.	0.00	n.a.	0.00	n.a.	0.00	n.a.	0.00
Transfers (domestic)	n.a.	17.50	n.a.	20.00	n.a.	18.00	n.a.	8.00
Export	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Closing stock	n.a.	10.00	n.a.	8.00	n.a.	5.00	n.a.	7.00
Physical Inventory on the DD MMM								7.00

Table 1: Mass balance final concentration of Schedule 2B chemical >30%

The **declared and verified** figures for the processed Schedule 2B chemical are represented in the '**Processing**' line.

As the final concentration of the declared Schedule 2B chemical **remains above 30%** concentration, the processed figures **should not be included** in the line '**Quantity ≤30%**' and the line may be deleted from the table as the IT sees fit.

Transfers and exports include the amount of Schedule 2B chemical that was transferred. The remaining Schedule 2B chemical will be observed in the closing stock.

Example 2: Processing to a final concentration of Schedule 2B chemical ≤30%

Consider a plant that processes, by means of dilution, a Schedule 2B chemical from **98%** concentration to different blends, which are all **below 30%** concentration of the Schedule 2B chemical.

The table below shows the quantities declared by the State Party as well as those verified by the IT. All calculations are based on 100% of the declared Schedule 2B chemical.

	2016		2017		2018		2019	
	Decl.	Verif.	Decl.	Verif.	Decl.	Verif.	Decl.	Verif.
Opening stock	n.a.	12.50	n.a.	10.50	n.a.	12.00	n.a.	7.00
Purchase (domestic)	n.a.	0.00	n.a.	0.00	n.a.	0.00	n.a.	0.00
Import	20.00	20.00	18.00	18.00	15.00	15.00	12.00	12.00
Production	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Processing	22.00	22.00	16.50	16.50	20.00	20.00	15.00	15.00
Quantity ≤30%	n.a.	22.00	n.a.	16.50	n.a.	20.00	n.a.	15.00
Transfers (domestic)	n.a.	0.00	n.a.	0.00	n.a.	0.00	n.a.	0.00
Export	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Closing stock	n.a.	10.50	n.a.	12.00	n.a.	7.00	n.a.	4.00
Physical Inventory on the DD MMM								4.20

Table 2: Mass balance final concentration of Schedule 2B chemical ≤30%

The **declared and verified** figures for the processed Schedule 2B chemical are represented in the '**Processing**' line.

As the final concentration of the declared Schedule 2B chemical is now **below 30%** concentration, the processed figures **should be included** in the line '**Quantity ≤30%**'.

Transfers and exports include the amount of Schedule 2 chemical that was transferred at above the 30% concentration. In this example, since all blends had concentration below 30%, no transfers or exports were included in the amounts and calculations.

Example 3: Processing to a final concentration of Schedule 2B chemical both >30% and ≤30%

Consider a plant that processes, by means of dilution, a Schedule 2B chemical from **80%** concentration to different blends with varying concentrations between **20 to 50%** of the Schedule 2B chemical.

The table below shows the quantities declared by the State Party as well as those verified by the IT. All calculations are based on 100% of the declared Schedule 2B chemical.

	2016		2017		2018		2019	
	Decl.	Verif.	Decl.	Verif.	Decl.	Verif.	Decl.	Verif.
Opening stock	n.a.	15.00	n.a.	5.00	n.a.	12.00	n.a.	2.00
Purchase (domestic)	n.a.	0.00	n.a.	20.00	n.a.	0.00	n.a.	0.00
Import	30.00	30.00	20.00	20.00	22.00	22.00	n.a.	12.00
Production	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Processing	40.00	40.00	33.00	33.00	38.00	38.00	40.00	35.00
Quantity ≤30%	n.a.	20.00	n.a.	15.00	n.a.	17.00	n.a.	10.00
Transfers (domestic)	n.a.	20.00	n.a.	18.00	n.a.	15.00	n.a.	0.00
Export	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Closing stock	n.a.	5.00	n.a.	12.00	n.a.	2.00	n.a.	4.00
Physical Inventory on the DD MMM								4.20

Table 3: Mass balance final concentration of Schedule 2B chemical both >30% and ≤30%

The **declared and verified** figures for the processed Schedule 2B chemical are represented in the '**Processing**' line.

As the final concentration of the declared Schedule 2B chemical varies from **above 30%** to **equal or below 30%** concentration, only processed figures **below or equal 30%** concentration **should be included** in the line '**Quantity ≤30%**'.

On the other hand, transfers and exports should include only the amount of Schedule 2 chemical that was transferred above the 30% concentration. In this example, only those blends that are above 30% concentration have been included in the calculations.

Exceptions

One exception was created in which the suggested additions to the table would need to be seen differently, as well as the equation embedded in the closing stock being tailored to the given scenario.

In the case where the initial concentration of the processed Schedule chemical is **below or equal 30%** and the final concentration **above 30%**, the former should be **added** to the mass balance (see example 4).

This is a very unlikely scenario given that the easy of recovery for the Schedule 2B chemical may be unpractical and not economically viable.

Example 4: Processing to a final concentration of Schedule 2B chemical to >30% when the starting material is a Schedule 2B ≤30%

Consider a plant that processes, by means of purification, a Schedule 2B chemical from ≤**30%** concentration to a final product with **80% concentration** of the Schedule 2B chemical for further export.

The table below shows the quantities declared by the State Party as well as those verified by the IT. All calculations are based on 100% of the declared Schedule 2 chemical.

	2016		2017		2018		2019	
	Decl.	**Verif.**	**Decl.**	**Verif.**	**Decl.**	**Verif.**	**Decl.**	**Verif.**
Opening stock	n.a.	10.00	n.a.	15.00	n.a.	18.00	n.a.	3.00
Purchase (domestic)	n.a.	0.00	n.a.	0.00	n.a.	0.00	n.a.	0.00
Import	0.00	0.00	0.00	0.00	0.00	0.00	n.a.	0.00
Production	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Processing	30.00	30.00	33.00	33.00	25.00	25.00	20.00	20.00
Quantity ≤30%	n.a.	30.00	n.a.	33.00	n.a.	25.00	n.a.	20.00
Transfers (domestic)	n.a.	0.00	n.a.	0.00	n.a.	0.00	n.a.	0.00
Export	25.00	25.00	30.00	30.00	40.00	40.00	15.00	15.00
Closing stock	n.a.	15.00	n.a.	18.00	n.a.	3.00	n.a.	8.00
Physical Inventory on the DD MMM								8.00

Table 4: Mass balance final concentration of Schedule 2B chemical from ≤30% to >30%

The **declared and verified** figures for the processed Schedule 2B chemical are represented in the '**Processing**' line.

As the final concentration of the declared Schedule 2 chemical is **above 30%** and the starting material is **equal or below 30%** concentration, only the processed figures **equal or below 30%** concentration to **above 30%** concentration **should be included** in the line '**Quantity ≤30%**'.

In this unique scenario, the line 'Quantity ≤30%' needs to be considered as an addition to the mass balance ('Closing stock' calculation') since the processing activity would be an accumulation of Schedule 2 chemical to the plant site inventory.

Transfers and exports include the amount of Schedule 2B chemical that was transferred if above the 30% concentration. In this example, since all blends have concentration above 30%, exports are included in the mass balance calculation.

Example 5: Processing to a final concentration of Schedule 2B chemical both >30% and ≤30% when the starting material is a mixture of two or more Schedule 2B, consisting of one or more Schedule 2B >30% and of one or more Schedule 2B ≤30%

Consider only the initial Schedule 2B chemicals in the mixture that are **above 30%**. Therefore consider a plant that processes, by means of dilution, a mixture of the Schedule 2B chemicals, from which only one of these is **above 30%**, with **80%** concentration to different blends with varying concentrations between **20 to 50%** of the Schedule 2B chemical.

In this case, the mass balance calculation and table will be similar to **example 3**.

Note for trainers: There might be cases where the mixture of two Schedule 2B04 chemicals is declared under a single CAS number. In these cases, the approach from SPs differs and is not consistent. Some SPs consider this as discrete Schedule 2B04 chemical and take into account both components, irrespective of their individual concentrations, as long as the combined concentration is **above 30%**. Some others declare only the Schedule 2B04 chemical that is **above 30%** and omit the other if its concentration is **equal or below 30%**. The recommendation might be to follow each SP's approach. Therefore, it is best not to raise this point as it might confuse the trainees. However, if this point comes up, the above recommendation should be supported.
