

APPLICATION POLICY

NUMBER: SR&ED 2002-02R2

DATE: July 29, 2005

SUBJECT: Experimental Production and Commercial Production with Experimental Development Work – Allowable SR&ED Expenditures

In this paper, the legislative references are to the *Income Tax Act* (the Act) and the regulatory references are to the *Income Tax Regulations* (the Regulations).

REVISION

The purpose of this revision is to clarify the methodology that claimants should use to distinguish between experimental production (EP) and experimental development (ED) work that occurs in conjunction or simultaneously with commercial production (CP+ED). EP and the ED part of CP+ED are eligible. The purpose of distinguishing between EP and CP+ED is to isolate the ineligible CP.

This revision is a clarification of the expenditure rules that apply in the situations described above. **The key principles stated in the application policy have not changed.**

Note

On December 20, 2002, the Minister of Finance released a package of draft technical amendments to the Act. One of the proposed changes was to make allowable, under the proxy method, the cost of materials transformed in the prosecution of SR&ED. In this application paper we have reflected this proposal as if it were law.

General comments

In this application policy we refer to “materials”, “materials consumed”, “materials transformed” and “ITC recapture”. The application policies SR&ED 2000-01 *Cost of materials for SR&ED* and SR&ED 2000-04 *Recapture of Investment Tax Credit* discuss these topics. Also, Application Policy SR&ED 2004-03 *Prototypes, Pilot Plants/Commercial Plants, Custom Products and Commercial Assets* was issued on October 5, 2004 to cover these related topics.

The focus of this application policy is on situations where ED is performed in a manufacturing or processing environment (shop-floor). **However, the key principles and methodology described in this application policy also apply to other situations.**

The concept of ED in the shop floor environment is discussed in the *Cross-Sector Shop Floor Guidance Document*. It states that shop floor SR&ED commonly occurs in a variety of industry sectors and is predominantly ED in nature.

The Canada Revenue Agency (CRA) may issue sector guidance documents that address how this application policy is to be applied in a particular industry. Any comments in a sector guidance document clarifies and extends for the particular sector the key principles outlined in this application policy.

To date, two sector guidance documents discussing EP and CP+ED have been issued and both are available on our Web site:

- Pulp and Paper Sector Guidance Document
- Chemicals Guidance Document #3 – Chemical Processes

Note: It is not the purpose of this paper to discuss issues such as documentation or supporting information and the tracking of SR&ED costs. For information on these subjects, refer to the *Guidance Document: Allocation of Labour Expenditures For SR&ED* and the *Cross-Sector Shop Floor Guidance Document*, posted on our Web site.

Objectives/Issues

The objectives of this application policy are twofold:

- 1) To present a methodology for assessing where EP is present, as opposed to CP+ED.
- 2) To determine the allowable SR&ED expenditures associated with EP or CP+ED.

The distinction between the two situations depends on the technical considerations and the facts relating to a particular trial. The impact on the allowable SR&ED costs varies depending on the particular situation.

This is difficult because of the inevitable overlap between the SR&ED work and the normal commercial activities resulting from the sharing of the same processes and equipment.

Section I of the application policy discusses EP and Section II discusses CP+ED.

Methodology

The claimant should use the following sequential steps to determine the allowable SR&ED expenditures:

- 1- Determine whether the work is ED by applying the three eligibility criteria (see Note).
- 2- Determine the context of the ED, i.e., EP or CP+ED, on the basis of technical considerations and supporting facts (“evidence”), as discussed in sections I and II of this application policy.
- 3- Determine the allowable SR&ED expenditures in accordance with the context of the ED.

Note: The *Cross-Sector Shop Floor Guidance Document* explains that experimental work on the shop floor can be SR&ED and to be eligible, the work undertaken must include all of the three criteria: Scientific or technological advancement; Scientific or technological uncertainty; Scientific and technical content. Further, direct support work, specifically engineering or design, operations research, mathematical analysis, computer programming, data collection, testing and psychological research that are commensurate with the needs of SR&ED and the resolution of associated problems can also be claimed.

It is the responsibility of the claimant to determine whether the work is ED and then to determine and justify the context of the ED.

Determining the context of ED must be repeated for each trial considered to be commensurate with the needs of the ED project.

That is, the context of each trial, whether it is EP or CP+ED, must be independently determined by the claimant based on technical considerations and evidence relevant to that specific trial.

It is possible that there may be a combination of one or more EP trials and/or one or more CP+ED trials for a given ED project.

It is important to note that the sale of any production, whether it results in a profit or a loss, should not be used to determine whether the context of the ED is EP or CP+ED. Rather, a product sale should trigger further investigation identifying other technical considerations and evidence (supporting facts) that can be used to determine the context of the work.

Ultimately, all the circumstances surrounding a particular situation will determine the context of the work.

SECTION I: EXPERIMENTAL PRODUCTION

In this section, we clarify the CRA's position with respect to the deductibility, for SR&ED purposes, of expenditures such as the cost of labour and the cost of materials consumed and transformed when the experimental development results in experimental production.

Background

The position outlined in this section results from the following changes to the legislation and its application:

- The amendment to paragraph 2900(2)(a) of the Regulations provides that, under the traditional method, expenditures directly attributable to the prosecution of SR&ED

include “the cost of materials consumed or transformed” in such prosecution. This amendment is applicable to costs incurred after February 23, 1998.

- The application of the decision rendered in *Consoltex Inc. v. The Queen*, 97 DTC 724, [1997] 2 CTC 2846 (Tax Court of Canada).
- The Investment Tax Credit (ITC) recapture rules in subsections 127(27) to (35) of the Act. These rules apply to property sold or converted to commercial use after February 23, 1998.

Definition

For the purposes of this paper, experimental production is defined as follows:

- EP means the output of experimental development that is required to verify whether the technological objectives have been met and/or if a technological advance is achievable.

And

- The purpose of the trial is to evaluate the technical aspect of the project. This is determined on the basis of the technical considerations and evidence relating to the particular trial (see below). Accordingly, the resulting sale of the EP is normally only incidental or secondary to the carrying out of ED work.

EP may be necessary, for example, to document and/or demonstrate that technological advancements are achievable in a commercial setting and to further resolve technological uncertainties, and evaluate the SR&ED project.

Experimental production may occur in the following situations:

- A. When the SR&ED involves the development of a new product, process or equipment or the improvement of existing materials, devices, products or processes in a commercial facility, e.g. trial production runs from an improved line;
- B. When the EP results from the operation of a pilot plant or a prototype (as defined in Information Circular 86-4R3).

EP technical considerations in shop floor environment

When batch or continuous mode trial runs are carried out to test new process parameters, i.e., those outside normal established process, procedures, ranges and tolerances, and there is a technical risk to the process or product, the context of the ED is considered EP, provided that the technical risk be attributable to the technological uncertainties. Whether the technical risk to the process or product justify EP determination is based on technical considerations and evidence applicable to EP.

The technical considerations that could lead to the conclusion that there is technical risk to the process or product and therefore, that the context is EP, are as follows:

- The extent of the changes being undertaken is such that it is uncertain how the experiment will impact the process or the product manufactured.
- The ED involves a change to the process resulting in a potential change to the technical specifications of the product and/or there is a risk that the process itself may become unstable leading to output inconsistencies, production interruptions and/or stoppages, or even equipment damage.
- The characteristics of the new product or process are potentially different than those of any existing or previous products or processes. This could, in the short-term, lead to a risk of lower quality or clearly substandard product.
- The efficiency of a new process combination is uncertain. The SR&ED could result in excessive yield losses, over and above normal yield losses. There is potential for a negative impact on the modified process.
- The characteristics of the new product and associated processes being studied are different from normal or existing products and their associated processes, i.e. the normal, established operating states, such that "it is uncertain how the experiment will impact on the process or the product manufactured"
- Other technical considerations and complementary factors apply, depending on the type of project or industry (refer to sector guidance documents).

Evidence of EP

To determine the context of the ED the analysis should also take into account the evidence (see below). **In other words, the facts must support the preliminary evaluation that was based on the technical considerations.** We give below some evidence of EP. The list is not exhaustive.

It should be noted that:

- The evidence (factors) enumerated must be used within the context of a project and not on a "check-list" basis.
- The number of factors met is irrelevant to the merits of a case for EP or CP+ED.
- No one factor carries a greater weight than another.
- No one factor, in isolation, is determinative.

- It is a combination of technical considerations, supported by evidence that makes it possible to determine the context of ED.

FACTORS

- Specific experimental operating instructions and other consistent records were prepared for the trial as part of the original project plan.
- Evidence of special tracking, classification, monitoring or recognition of the project/product.
- Meeting minutes or other relevant sources of supporting information were available to substantiate and corroborate the planning and technical risk associated with the trial.
- Higher management approval for the trial (senior management gave the authorization to proceed with the trial that involved a technical risk to the product or process).
- Significant input and close monitoring of the work by technically qualified individuals (technical personnel or contractors) .
- Presence of additional technical personnel or supervision.
- Evidence that specific monitoring strategies and operating instructions for the ED were communicated to the operating staff.
- Employees were involved in designing specific experiments, and monitoring and analysing test data from the trials.
- The experimental process introduces significant changes that affect the core of the regular production process.
- Production quantities commensurate solely with the needs of the ED project are used at each stage (in contrast to what is normally produce).
- The ED is performed on a dedicated experimental line, separate from the commercial system or on a production line borrowed solely for this purpose.
- Production of a smaller quantity before producing the total quantity to ensure specifications are attainable (proving out of specifications for the product or process).
- Large incrementality of SR&ED costs (based on the facts of the case).
- The SR&ED costs are significant in terms of overall standard costs of production.

Costs attributable to the required experimental production

For EP costs to qualify as SR&ED expenditures, the EP must be required for evaluating or validating the SR&ED project. In this paper we will refer to this as “**required experimental production**” (required EP).

Labour

The portion of labour costs for an employee directly undertaking, supervising or supporting (traditional method), or for an employee directly engaged in (proxy method), the ED work that results in the required EP, is an allowable SR&ED expenditure.

Materials

Cost of materials consumed/transformed

The cost of materials consumed or transformed in producing the required EP is a deductible SR&ED expenditure under both the proxy and the traditional methods.

The cost of materials transformed into the required EP is an expenditure that is all or substantially all attributable to the prosecution of SR&ED.

Excess production (production not required for evaluating or validating the SR&ED project)

If a claim is reviewed, it is particularly important for the research and technology advisor’s (RTA’s) report to describe:

1. The basis used by the claimant to justify why the EP was required as part of the SR&ED.
2. The segregation that the claimant made between the excess production and the production that was required for evaluating or validating the SR&ED project. If there is any excess production that is part of the claim, the RTA should describe why that production is not part of the required EP.

Labour, overhead, and materials costs relating to any excess production are not allowable SR&ED expenditures. Such costs relate to excluded work (under paragraph (i) of the definition of SR&ED in subsection 248(1) of the Act).

Where excess production or other excluded work (e.g., putting the product into a saleable state) has been claimed and this fact is confirmed in the RTA’s report, the claimant, in concert with our RTA, should isolate the SR&ED work. The claimant should then allocate the related labour, overhead and materials costs for verification by the financial reviewer.

Sale of experimental production

The ITC recapture rules, as specified in subsections 127(27) to (35) of the Act, apply to recapture all or a portion of the ITC relating to the cost of materials transformed when EP is sold or converted to commercial use after February 23, 1998. Note that these rules do not

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apply to recapture ITC in respect of SR&ED labour costs and overhead expenditures incurred by a claimant. Further, the CRA generally does not apply the ITC recaptures rules on materials consumed. See Application Policy SR&ED 2000-04 *Recapture of Investment Tax Credit* for more details on the recapture rules.

Any proceeds from the sale of EP should not be taken into account when determining the cost of experimental production.

Please see the chart and example below.

**Chart I
Expenditures incurred for experimental production**

EXPENDITURES	PROXY or TRADITIONAL METHOD
Salaries	Salaries of employees directly undertaking, supervising or supporting the ED (traditional method) or directly engaged in the ED (proxy method) resulting in the required EP are allowable under subsection 37(1). Salaries related to any excess production or other excluded activities are not allowable under subsection 37(1). Any excess production or excluded activities must be identified in the RTA's report.
Cost of materials consumed in the prosecution of SR&ED	Allowable under subsection 37(1).
Cost of materials transformed into the experimental product	ASA attributable to SR&ED if EP is required: allowable under subsection 37(1). Cost of materials transformed in excess production, as identified in the RTA's report, is not allowable under subsection 37(1).
Overhead costs	Must be specifically identified. Allowable under subsection 37(1) if directly related and incremental. Note: With the Proxy method overhead costs are replaced by the prescribed proxy amount.
ITC Recapture	ITC recapture provisions will apply when property is sold, or converted to commercial use after February 23, 1998. See Application Policy SR&ED 2000-04.

Example: EP

A textile manufacturer's work to modify a weaving machine to increase the rate of production by 50% has been determined to be ED. Assume that the context of the ED is EP. A series of test production runs are required to assist in the resolution of the technological

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problems involved with these modifications. The test production runs produce fabric of poor quality, which is sold for \$15 per metre. Due to numerous shutdowns to make adjustments and unusually high waste, the test production runs cost \$35 per metre to produce (materials wasted \$5, materials transformed into the fabric \$5, directly engaged salaries \$15 and overhead \$10). The materials were purchased from an arm's length supplier. Total production was 1000 meters and the RTA found it to be reasonable and necessary for the SR&ED. Following is a summary of those expenditures under both the proxy and traditional methods which would be allowed as SR&ED.

EXPENDITURES	PROXY		TRADITIONAL	
Salaries	Deductible 37(1):	\$15,000	Deductible 37(1):	\$15,000
Materials consumed	Deductible 37(1):	\$5,000	Deductible 37(1):	\$5,000
Materials transformed into the fabric	ASA for SR&ED	\$5,000	ASA for SR&ED	\$5,000
Overhead		N/A	2900(2)/(3)	\$10,000
Total 37(1) expenditures		\$25,000		\$35,000
Prescribed proxy amount	65% of \$15,000 (rounded)	\$10,000		N/A
Qualified expenditures		\$35,000		\$35,000
ITC at 35%		\$12,250		\$12,250
Recaptured ITC	35% of \$5,000 (materials transformed)	\$1,750	35% of \$5,000 (materials transformed)	\$1,750
Net effect on ITC		\$10,500		\$10,500

**SECTION II:
COMMERCIAL PRODUCTION WITH EXPERIMENTAL DEVELOPMENT**

In this section we outline the general framework for determining allowable SR&ED expenditures when ED occurs in conjunction or simultaneously with CP. Generally, in this situation, CP will be the dominant factor controlling which expenditures qualify.

Context of ED in a CP environment

Typically, in a manufacturing or processing environment, the ED that occurs is in process improvement and the work to improve the process occurs during commercial production runs. The goal of ED in this environment is generally to achieve incremental improvement in the process (must meet the 3 eligibility criteria).

The ED is generally carried out as continuous process improvement while normal production is taking place. In this mode of operation, a small number of changes are made to the process parameters, in order to minimize any adverse effect on the quality of output, while process indicators are being monitored. These changes to process parameters can take place over a period of days or weeks. The objective of this experimentation is to obtain a set of operating parameters that would result in an improved process, usually reflected in reduced costs, without sacrificing output quality. Under this scenario the only output is CP.

Note: Assuming that the work is ED but the EP technical considerations and evidence are not met, the context of the ED will be CP+ED.

For greater certainty, some evidence of CP+ED are given below. The list is not exhaustive. Refer to Section I for comments on the manner to use the list of evidence and characteristics.

Evidence CP+ED

- No specific experimental operating instructions and other consistent records were prepared for the trial as part of an original project plan.
- No evidence of special tracking, classification, monitoring or recognition of the project/product.
- Meeting minutes or other relevant sources of supporting information were not available to substantiate and corroborate the planning and technical risk associated with the trial.
- Trial approved by production manager rather than senior management.
- Little input/supervision from company technical experts.
- No or minimal presence of additional technical personnel or supervision

- No evidence that specific monitoring strategies and operating instructions for the ED were communicated to the operating staff.
- Employees were not involved in designing specific experiments, and monitoring and analysing test data from the trials.
- The experimental process does not introduce significant changes that affect the core of the regular production process.
- Larger than minimum quantities are used at any given stage.
- Small incrementality of SR&ED costs (based on the facts of the case).
- The SR&ED costs incurred in the production run are normally insignificant in terms of the overall standard production costs.

General framework for determining allowable SR&ED expenditures:

1) Identification of eligible SR&ED work

As stated in the current version of Interpretation Bulletin IT-151, some projects “that may involve SR&ED work may also involve commercial production work that does not constitute SR&ED under paragraph (i) of the definition of SR&ED in subsection 248(1). To determine the eligible expenditures on SR&ED for such projects, the SR&ED work and the non-SR&ED work should be identified and the project costs allocated between these activities”.

A product resulting from ED that occurs in conjunction or simultaneously with CP would fall into this category.

2) Allowable SR&ED expenditures

Labour Costs

Labour costs relating to the ED work identified by the claimant are allowable SR&ED expenditures, subject to the expenditures rules under the proxy or traditional method. Note that salary or wages of non-specialized employees performing eligible ED work that was identified would be considered as directly engaged provided that the non-specialized employee's work is supervised by staff who has scientific or technological qualifications.

Overhead Expenditures

Overhead expenditures are allowable under the traditional method if the costs are directly related and incremental to the prosecution of ED work. The incremental test for overhead expenditures related to the prosecution of SR&ED is found in paragraph 2900(2) (c) of the

Regulations. Under the proxy method, the prescribed proxy amount replaces the overhead costs.

Cost of materials

Materials that would in any case have been consumed or transformed in normal production work are not attributable to ED. Only the additional costs of materials consumed or transformed because of the SR&ED could be allowed. The fact that standard materials (those normally used for CP) are required for the prosecution of ED does not make their cost an allowable SR&ED expenditure since the materials are consumed/transformed in the prosecution of CP (i.e., excluded work for SR&ED purposes).

All costs of input materials incurred before the start of the ED project are attributable to CP.

Costs relating to the incremental loss of materials resulting from their processing may be claimed as cost of materials consumed in SR&ED, provided that the loss is reasonably attributable to the ED. For example, a reasonable estimate could be the cost related to the actual loss of materials minus the cost related to the standard loss of materials resulting from processing. Any other reasonable method may be used if it is supportable and verifiable.

RTA's review report

If a claim is reviewed, the RTA will first establish that the work is eligible. Then, the RTA and the financial reviewer (FR) should do a joint review of the context of the eligible work (EP or CP+ED) and identify the issues to be covered in the review.

In particular, the RTA should review the technical considerations that the claimant used as the basis to determine whether the context of the ED is EP or CP+ED and the FR should review the evidence to support the conclusion about the context of the ED.

If a claimant has determined the context of the ED as EP but the RTA and the FR are of the opinion that it is rather CP+ED, the decision needs to be fully documented in the RTA's report and the rationale for CP+ED must be explained.

It is very important that the RTA verifies the start and the end dates of the ED project and identifies any change to the dates in the report.

The RTA's report should identify the materials consumed/transformed that are in addition to the standard materials.

Where ineligible work has been claimed, the claimant in concert with the RTA should isolate the SR&ED work and allocate the SR&ED costs accordingly for verification by the FR.

Continuous processes

ED may be performed in conjunction or simultaneously with CP work by a company using multi-stage continuous processes that transform step-by-step the raw material to its final product.

If it is confirmed by the RTA and the FR that the context of the ED is CP+ED, the rules explained in this section apply. We offer, however, the following examples/comments:

Situation 1

Company ABC's manufacturing process is comprised of 5 steps.

1→	2→	3→ ED	4→	5→	Product
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The company undertakes an ED project in step number 3. The context of the work is CP+ED. The ED project started with the transition period (ramp-up) leading to the ED work in step number 3 and ended before the ramp-down period returning to standard production in step number 4.

There is no ED work involving steps 1, 2, 4 and 5.

Comments

There are no allowable SR&ED costs for steps 1, 2, 4 and 5 (costs are attributable to CP).

SR&ED costs for step 3 are subject to the rules governing the situation CP+ED.

ITC recapture rules apply to the costs of materials transformed and allowed under subsection 37(1).

Situation 2

Same as situation 1 above i.e., CP+ED but the ED work is performed in each of the 5 steps. Ramp-up before step 1, ramp-down after step 5.

1→ ED →	2→	3→	4→	5→	Product
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Comments

SR&ED costs for steps 1 to 5 are subject to the rules governing the situation CP+ED.

ITC recapture rules apply to the costs of materials transformed and allowed under subsection 37(1).

Situation 3

Company ABC's manufacturing process is comprised of 5 steps. The company undertakes an ED project in step number 3. The ED in that step is so extensive that all the production line from step number 3 was dedicated to the ED.

1→	2→	3→ ED →	4→	5→	Product
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The claimant determines that the context of the trial is EP. Furthermore, the EP was required to evaluate or validate the ED project and the technical considerations and evidence corroborate the determination of EP.

Comments

The rules relating to EP in Section I apply to costs incurred from steps number 1 to 5.

The cost of input materials required for step number 3 is allowable under subsection 37(1). This includes the cost of producing the materials in steps number 1 and 2.

ITC recapture rules apply on the costs of materials transformed that were acquired from a third party if the experimental product is sold or converted to commercial use.

Alternative Approach

In some cases it is very difficult to apportion expenses between eligible SR&ED work and ineligible commercial work. Furthermore, the process of isolating the SR&ED work may be impossible due to a lack of technical documentation. An alternative approach to estimating a claimant's allowable SR&ED expenditures may be used if the following conditions are met:

- it is impossible to isolate the SR&ED work (i.e., neither the claimant nor the RTA can isolate the work); and
- the RTA is of the opinion that it is appropriate to use such an approach in the context, for e.g., only a portion of the work can be isolated; and
- the claimant agrees with the use of this approach and has signed a waiver of the right to object or appeal under subsection 169(2.2) of the Act. If the claimant does not agree, the method described in point 1 of the general framework above will apply.

The alternative approach cannot be used if the above conditions are not met. In other words, the general framework for determining allowable SR&ED expenditures must be followed unless the above conditions are met.

However, if the claimant submitted a claim utilizing this alternative approach and the general framework could have been used, the CRA will accept the use of this alternative approach, but not for years subsequent to the first CRA review the claim.

The alternative approach may represent a practical solution to estimating the costs attributable to the SR&ED work, i.e., the costs that have been incurred to resolve any scientific or technological uncertainties. The incremental costs may be calculated as the difference between the actual costs incurred for the CP+ED run minus the standard production costs attributable to CP without ED. The standard CP costs are normally readily available and should be verifiable by CRA staff (the standard CP costs should not be substantially different from the actual costs of normal CP). The incremental costs are allowable SR&ED expenditures to the extent they are reasonably attributable to the ED.

Note: In cases where a standard cost is not available, CRA will accept a comparable cost chosen by the claimant, provided that the result provides a reasonable estimate of the SR&ED expenditures.

This approach identifies an overall amount of incremental costs incurred as a result of SR&ED. It is unnecessary to show that a specific expenditure item meets the incremental test on its own.

The use of the alternative approach provides a reasonable estimate of SR&ED costs [costs of achieving the technological advance]. However, there is usually little incrementality of the salary or wages incurred for the non-specialized employees directly engaged in ED work carried out in conjunction or simultaneously with CP. Administratively, the CRA will accept a reasonable, supportable and verifiable allocation to SR&ED of the salary or wages of the non-specialized employees. However, no amount should be allocated for work done before the start or after the end of the ED project.

Example of alternative approach:

A claimant is conducting ED work and the context of the work is CP+ED. The continuous production process is comprised of 5 stages. The claimant has determined that the ED starts at stage 3 and ends in stage 5. Therefore all costs associated with stages 1 and 2 are attributable to CP, which is an excluded work. The following costs are incurred for stages 3 to 5 (in \$000).

Cost	Actual	Standard	Incremental
Salaries of specialized employees (doing ED)	10	0	10
Salaries of non-specialized employees	31	30	1
Materials consumed	20	9	11
Materials transformed	100	91	9
Overhead	<u>39</u>	<u>30</u>	<u>9</u>
Total	200	160	40

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The allowable SR&ED expenditures under subsection 37(1) is \$40,000. When the product is sold or converted to commercial use the ITC recapture rules apply only on the allowable \$9,000 of materials transformed in SR&ED.

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