Identities for a parametric Weyl algebra over a ring

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This is a joint work with Carlos Arturo Rodriguez Palma. In 2015 Benkart, Lopes and Ondrus introduced and studied in a series of papers the infinite-dimensional unital associative algebra A_h generated by elements x, y, which satisfy the relation $yx - xy = h$ for some $0 \neq h \in \mathbb{F}[x]$. We generalize this construction to $\mathsf{A}_h(\mathsf{B})$ by working over the fixed $\mathbb{F}$-algebra B instead of $\mathbb{F}$. Namely, for $h \in Z(\mathsf{B})[x]$, the *parametric Weyl algebra* $\mathsf{A}_h(\mathsf{B})$ *over the ring* B is the unital associative algebra over $\mathbb{F}$ generated by B and letters x, y commuting with B subject to the defining relation $yx = xy + h$ (equivalently, $[y, x] = h$, where $[y, x] = yx - xy$), i.e.,

$$\mathsf{A}_h(\mathsf{B}) = \mathsf{B}\langle x, y\rangle / \mathrm{id}\{yx - xy - h\}.$$

We describe the polynomial identities for $\mathsf{A}_h(\mathsf{B})$ over the infinite field $\mathbb{F}$ in case $h \in \mathsf{B}[x]$ satisfies certain restrictions.